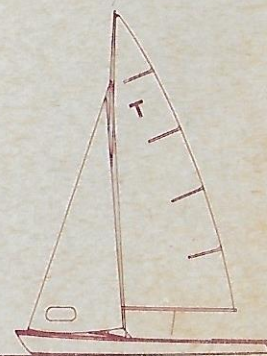


*international **T**empest association*

1967



INTRODUCTION

BY THE
CHAIRMAN



To introduce this first International Tempest Association Year Book as Chairman of the International Tempest Class Launching Committee is a great privilege. Future Year Books will be fatter, will have more records in them, lists of more fleets, boats and owners, but none will be quite so important as this first issue which is going to new owners. It is on these new owners that the success of the Class will depend.

The basic idea of this boat is that it shall be a true one-design and that the International Tempests built in any country of the world will be exactly alike, one to the other, the only difference being the skill of the helmsman. If all owners bear this in mind in the formative stages we will be putting up a strong defence against newcomers who will undoubtedly think of many ways in which the boat could be made to go faster, but which would defeat its greatest asset—that of one-designedness.

The International Tempest is one of the greatest boats designed by Ian Proctor. It is one of the most outstanding boats ever to have been chosen by the I.Y.R.U. to be made international.

I hope that, with the co-operation of all owners, both national and international races in 1967 will be a great success.

I wish you all fair sailing.

BEECHER MOORE,
Chairman
International Tempest Association



"Tempest" on her first sail, April 1965. John Oakeley at the helm, Cliff Norbury crewing.

LAUNCHING THE INTERNATIONAL TEMPEST CLASS

By IAN PROCTOR

A particularly interesting problem was presented in the designing to the International Yacht Racing Union's basic specification for the proposed Two-man Keelboat. The length, sail area, draft and keel weight, with the pointed reminder that a trapeze could be used, indicated the opportunity of a boat that, to us in England at any rate, would be something entirely new; a boat in fact which would plane almost as easily as a top performing centreboarder, but at the same time would have the stabilising factor and security of a keel.

Such a boat was likely to prove the answer to those used to racing dinghies, who find that when they turn their thoughts to keel boats there is nothing which gives a sufficiently satisfying performance, particularly off the wind.

The need for a Two-man Keelboat had been hinted at I.Y.R.U. Conferences since 1960, but nothing definite had been done before 1963 towards instituting such a new class.

The specific requirements were finally announced by the I.Y.R.U. in 1963. A design competition was held in Holland, but ten years previously I had entered a boat for the Two-man Centreboarder Trials, from which the Flying Dutchman class was ultimately chosen, and experience indicated it might be best to delay producing and publishing the design until as late as possible to avoid the inevitable tendency towards pooling ideas. It was, after all, my Osprey which introduced the modern technique of trapezing to the Flying Dutchman and 5-0-5 prior to the 1954 Trials, though this was a revival of a less highly developed technique from the 1930s.

In Britain we are fortunate to have three active classes of high performance racing dinghies, in which design is free within the limitations of a rule framework. These classes, the National 14 ft., Merlin Rocket, National 12 footers and International 14 footers, are officially termed "restricted classes", but they are better called "development classes". Many years of continuous development in these classes has produced extremely advanced boats, which both in hull shape and gear bear very little resemblance to their forebears of twenty years ago. Much of my designing experience has been in these classes, which provide an endless source of interest.

One of the most valuable things learned from the long experience of designing for the restricted classes is the effect of each characteristic in the shape of the hull or the design of sail plan and its relation to the lateral plane. In fact there exists the benefit of almost constant tank testing of the most reliable kind, as new hulls and sail plans are evolved, and then sailed competitively. The design of a racing sail boat is inevitably a compromise seeking to achieve a wide range of performance characteristics. Sometimes that compromise is more successful than at others, but at least an experienced designer should know what sort of dish he will produce from the ingredients thrown in the cooking pot. Designers lacking the competitive performance data on fairly closely related designs, such as is found in the restricted classes, are almost inevitably at a disadvantage when it comes to producing a completely new type of boat aiming to achieve a very positive kind of performance. The Tempest was designed against this background.

Obviously, all the contestants in the Trials would use the sail area limit set by the I.Y.R.U. and it seemed clear also that almost everyone would design to the

maximum waterline length that could be contrived, always bearing in mind the official stipulation that "the ends of the boat must appear balanced". It seemed probable also that everyone would choose the minimum permitted keel weight, and this was the case, but there was wide variation in hull weights and the general conception, the British boats being lighter than the others and obviously paying more regard to planing performance. Tempest was not the lightest, but was designed for a long racing life in reinforced plastic construction. With the keel and trapezing crew helping to keep the hull upright, it seemed to me that the optimum angle at which the boat should sail would be about 15°, when both keel and trapeze man would be really working. Tempest's hull is, therefore, designed to sail efficiently at this angle.

A 22 ft. planing keelboat with 240 square feet of sail could obviously be quite a hair-raising machine in fresh winds when sailed in confined spaces by only two people unless the handling characteristics were good. Great attention was paid, therefore, to the manners of this boat to ensure that she had no shrewish vices or wild habits. One of the characteristics of the Tempest which is always remarked upon is her extreme controllability.

It was highly desirable that the new boat should be self-righting after a knock-down in extreme conditions, and entirely self-draining. A fair amount of spray was likely to blow into the cockpit in a boat sailing as fast as this in heavy weather, and to keep the sailing weight as low as possible the cockpit was made to self-drain at all angles of heel and at all speeds. This proved also extremely useful when the boat is left on moorings, as all rain water drains out.

I started designing Tempest in December 1964. W. Richardson and Co. Ltd. of Darlington began building her in February and everything went very smoothly. The boat was delivered in March, without any fittings and unriggered. Fittings were made by Ian Proctor Metal Masts Ltd. and I did most of the fitting out myself, screwing the bits and pieces on personally. My firm also, of course, made the spars and rigging.

She was ready for launching in April and we immediately got down to the job of tuning her. I was very fortunate that John Oakeley who, of course, sails Flying Dutchmen and ocean racers, and Cliff Norbury, who mainly sails National 12s, leapt at the chance of being helmsman and crew. They had both owned many boats of my design and we have done a great deal of sailing together, so it was great fun as well as being a good working team. We were limited to sailing at weekends, but concentrated hard on tuning up whenever possible and Tempest was taken out whatever the weather. Most of the time it blew hard and it soon sorted out any weaknesses. Having such a new type of boat we found that a few of the first ideas of gear needed changing; sometimes we had to toughen up and sometimes to pare down.

Although Ian Proctor Metal Masts Ltd. had some thirty-three different mast sections available, there was not one which was ideally suited to this boat and I designed a new section. The extrusion could not be produced until after we had started to sail her, but as soon as it arrived a new mast was made to give us a bendy rig, which proved highly efficient. The sail plan had been designed with a high foretriangle leaving just enough topmast to produce the right bending characteristics farther down the mast. A bending boom controlled by centre mainsheet traveller was used.

All the equipment was evolved from experience in the Flying Dutchman and other centreboarder classes. We had a very high degree of control over every

aspect of the sail plan including, of course, underdeck jib furling devices, internal mainsail clew outhaul, Cunningham hole controls, and so on. We also spent a great deal of time getting the sails as we thought they should be.

Division of work between helmsman and crew in a boat like this, which may often be sailed in top competition and make heavy demands on both, is important. Many of the controls normally left to the crew are taken over by the helmsman, who has at his fingertips the spinnaker halyard, spinnaker boom vang and jib furling gear. The spinnaker sheets can be handled by either helmsman or crew, the controlling point being at the bridge deck. The crew can, therefore, concentrate on setting the spinnaker pole and attaching its vang and lift while the helmsman makes other necessary adjustments.

One problem with such a prototype is finding a trial horse against which to tune. We had nothing more suitable on our water than a good fleet of Flying Dutchmen, which was perhaps fortunate as we had to set our sights high and work hard. We had some rapid surprises; the first was that under nearly all conditions Tempest had a comparable performance with the best of the Flying Dutchmen. I expected this to windward, but never hoped for it off the wind in planing conditions, yet we found that Tempest would tear along just about as fast in a plane. We also found that Tempest was faster in light airs. As was anticipated she showed up a little less favourably under the conditions in which the lighter Flying Dutchmen would just plane and Tempest, with her 500-lb. keel, just would not.

This planing ability was well beyond my expectations. Certainly the design was intended to produce a boat which would plane fairly readily, but the main objective was that Tempest should beat the other boats in the Trials, and I felt certain that some of those would almost ignore planing ability and would aim at speed to windward and light weather performance, both of which are characteristics which conflict with the design of fast planing boats. In any case, it was obvious that a keelboat, carrying 500 lb. of ballast, could not expect to plane as often as a centreboarder and, therefore, to sacrifice windward ability and light weather performance by putting too much emphasis on planing performance would have been a dangerous chance to take. The hull shape was, therefore, a compromise type and certain features which make for out and out planing were not used. For this reason mainly, the transition between the normal displacement sailing of the Tempest into planing is more gradual than for high performance centreboard types. She does not accelerate and lift in the same way, nor is she intended to.

John and Cliff, being very perceptive sailors, soon evolved a technique for getting the best out of Tempest. This, together with the fact that they never failed to take her out even in the worst weather, produced supreme confidence in the boat and in themselves. They felt that Tempest was invincible, and no doubt this helps.

We tried to think of everything, but I made one stupid mistake in using an untested rudder of a slightly modified shape for the I.Y.R.U. Trials and it broke in the third race, forcing her to retire when leading. Otherwise our feeling that Tempest was invincible would have been fully justified, for it was the only one of the nine races she did not win. We returned to the original rudder for the rest of the Trials.

During the Trials Tempest had won under every condition from very light airs to a really strong blow. She had also sailed with 40 kilos (88 lb.) of sand ballast

in the cockpit to prove that her performance was not solely due to lightness, and that if subsequent building in plastics made her a little heavier, she would not be inferior to the other trialists.

At the end of the Trials, which were conducted very efficiently, it was announced that no further Trials would be required and that the Selection Committee would recommend to the I.Y.R.U. Permanent Committee Meetings in November the adoption of the Tempest class as the new International Two-man Keelboat. Some members of the Selection Committee, including the Chairman Jan Loeff, were in favour of granting immediate International status, so that the impetus derived from the Trials would be maintained in establishing the new class. However, the main body of opinion in the I.Y.R.U. was against this.

Naturally, there is much pleasure to be gained from producing a design which ultimately is successful, but in the case of Tempest it went much further than this. Throughout the whole campaign there was wonderful co-operation from the builders, sailmakers and everyone else connected with the preparation of the boat. Also, we all hoped that perhaps the Tempest would introduce all over the world a really new and intriguing facet of sailing—the high performance planing keelboat.

Draft rules and measurement plans were submitted by me at the Trials to the Selection Committee, as I had thought that this would be a requirement from every competitor, for only with such rules could the development and future of the classes be assessed. However, I think that Tempest was the only boat to go to the Trials with comprehensive rules. I believe that in future all entries at similar Trials should submit draft rules.

At the end of the Trials Beecher Moore, who was one of the Selection Committee, was asked to work with me to develop the rules further for final submission to the I.Y.R.U. Beecher and I, though to some extent business rivals in as much as he is a Director of Jack Holt Limited, have been friends for a great many years, and I have crewed for him in Merlin Rocket and Hornet Championships and he has crewed for me in National 12 Championships. He has, of course, been closely associated with the development of Jack Holt's very successful classes. Working on the Tempest rules was stimulating, and we quite quickly had the rules ready for presentation to the I.Y.R.U. Conference. One of the principles was that all moulds for plastic boats should come from one source and be derived from a master "plug" or pattern.

Although the original stipulation by the I.Y.R.U. had been that the class should be for construction in one material only, and it was generally assumed that this would be plastic, representatives from both Holland and Sweden had asked at the Trials that timber construction should also be permitted. The rules that we prepared, therefore, allowed for both forms of construction and to some extent influenced the way in which the rules were drawn up, and the final form of the plastic boat.

Meantime, my prototype Tempest had gone off on demonstrations and boats had been built for Sweden and the U.S.A. Enthusiastic reports began to be received. More than sixty builders applied for licences. The plans and specifications for timber construction and the plans for plastic construction were submitted to Lloyds very soon after the Trials and its opinion eagerly awaited. Meanwhile investigations on suitable production of the plastic boat were made. I hope it will be thought natural that, as Richardsons had supported the project so well prior to the Trials, I wished for them to maintain an interest in the production



H.M. King Constantine XIII of Greece, Peter Scott—President of the I.Y.R.U.—and H.R.H. Crown Prince Harald of Norway inspecting the plastic prototype Tempest at the I.Y.R.U. Meetings, London, November 1965, when the Class was officially granted international status.

of the boat, provided of course that this did not conflict with the future welfare of the class. Richardsons themselves had no experience of plastic building but were keen to find a sub-contractor for the mouldings and assemble and finish the boats themselves, ultimately aiming to produce their own mouldings as experience was gained.

Time was ticking away and I thought it essential to have a plastic boat available at the I.Y.R.U. November Meetings. Lloyds' comments had not come through, and after several attempts to get its report it was decided that, if a plastic boat was to be produced by November, it was essential to go ahead without further delay. It was fortunate that we did, as the report eventually came through on 1st October exactly a month before the I.Y.R.U. Meetings at which the boat had to be shown. Had we waited for the report it would have been impossible to have produced a boat in time.

Having finished to our satisfaction the Class Measurement Rules, Beecher shook me to the core one day by saying "Now you must produce the Class Constitution and we will form a Caretaker Committee" The Constitution was drafted and I invited various people to serve on the Committee. Beecher was elected Chairman and under his leadership this Committee has been indefatigable and quite first class and Dinah White has done a tremendous amount of work as Class Secretary. We held a meeting before the I.Y.R.U. Conferences and made a few amendments to the Class Rules, which were circulated to I.Y.R.U. Delegates in October.

We had hoped that the plastic prototype would be ready for sailing before the I.Y.R.U. Conference, but in fact she was only finished in time for us to rig her outside the Royal Thames Yacht Club, where the meetings were held, at 2 o'clock at night after the first day of the Conference. The Wraybury Sailing Club had kindly given us facilities for the wooden prototype to be sailed there if any I.Y.R.U. Delegates wished to try her.

Various I.Y.R.U. Sub-committees worked very hard to go through the Tempest rules and constitution during the Conference, and it was a most interesting and exciting time. At the end of it the Class was given official International status.

Immediately, Richardsons were under pressure from many directions to produce official moulds to the ratified rules and to send boats to Boat Shows at New York, California, Zurich, Hamburg, Genoa, Paris, Amsterdam, Toronto and, of course, London. The boat for California had to be shipped within about three weeks. The moulds were rushed through and the boats were produced and shipped in time.

The result of this attempt to satisfy the demand to have the Tempest at the major boat shows was nearly disastrous. The moulds did not have time to cure properly and the stiffeners and framework in which they were supported caused distortions. The hulls were shoddy and of a low standard of finish. Deep was the gloom.

There was only one course to take—to start again and build new patterns, pre-production moulds, "plugs" and production moulds. It was necessary to go right back to the beginning, as the original pattern for the hull had been damaged beyond repair during the making of the first plastic deck mould.

I went to Paris, New York and Amsterdam, as well as, of course, London, and there faced the embarrassment of hearing the criticism of many disappointed potential Tempest owners.

Meantime, the I.Y.R.U. itself met complications. Arrangements were being made for the I.Y.R.U. to license boat builders to produce Tempests, but it was found that the I.Y.R.U. did not exist as a legal body. Now it was necessary to form holding companies to administer licences properly. This all took time.

Richardsons had by now formed a new company specialising in plastics and were employing plastics experts. They were making all the moulds themselves and great care was taken. As the rules of the class stipulated that building would be in the hands of a limited number of selected builders in each country, and that normally there would only be one where the territory could be adequately served by that number, and because these builders would be approved by Lloyds and known to be amongst the best, it was essential that the moulds should be of a very high standard indeed. Also, it was intended that all moulds had to come from the same "plug" and as boats would be produced from these moulds for perhaps the next twenty years or more, only the best was good enough.

Experts came from the U.S.A. and many others offered advice from several parts of the world. Each one had different ideas on how the moulds should be constructed, but the moulds were ready by March and immediately boats were produced from them.

During all these tribulations, when it sometimes seemed to me that the Tempest Class would never get going as it had promised so well to do, there was a cheering event which revived us. We had entered a Tempest in "Yachting's" important One-of-a-Kind Races in Florida, U.S.A. at the request of the organisers.

Richardsons had sent over one of the early plastic boats, which we knew to be overweight and not up to the quality for which we aimed. We had sails made by Jack Holt Limited and Musto and Hyde, and used these on the plastic prototype on the Hamble to assess them. John Oakeley agreed to go out and take the helm and Ernie Dean, an excellent American Flying Dutchman crew, took on the job of trapeze man.

It was not an easy operation. The Star class made an all out effort against the Tempest and chose Dick Stearns, former World Champion and 1964 Olympic Silver Medalist, as helmsman. The Tempest, apart from being overweight, was taken straight from her shipping crate and had to be sailed immediately without any real opportunity for tuning. Certainly at least one important tuning modification should have been carried out—the moving inboard of her jib fairleads—but this could not be done to this plastic boat in the time available. The races were in predominantly very light to light airs. Tempest won three of the five races and the Star won two in very light going indeed. The conclusion was that in wind speeds of 3 knots and under the Star was faster than the Tempest, but at wind speeds above this Tempest became increasingly superior, and the indication was that at moderate wind speeds she would have really trounced the Star. She received very favourable reports from the yachting magazines.

Lloyds had required certain modifications to be made to the original construction; mainly these concerned additional stiffeners. Lloyds had also made some helpful recommendations on the laminate specification to make it suitable for building throughout the world.

As soon as the boats were again in production, another snag arose. I had fixed the minimum weight rule at what I thought was reasonable for the plastic boat as originally specified. Now, producing to the amended specification, Richardsons found they could not get the weight down to the minimum and boats were coming out between 50 and 70 lb. over weight. Keen racing owners were refusing to take them at this weight. Only by disregarding the rules or the specification could Richardsons build boats which they could sell.

It was suggested that the minimum weight should be raised, but I dug my toes in to resist this and the Class Committee backed me up. Instead, the specification was re-amended and Lloyds' approval given for construction with less stiffeners (as originally designed) and a lighter deck laminate.

Lloyds had, some weeks earlier, made various tests on a Tempest, the results of which they found impressive. A boat was suspended with the bottom of the keel 7 ft. 6 in. from the water and she was dropped from that height. No signs whatever of damage were found. She was then supported under each end and 300 lb. weight applied amidships. The hull deflected only $\frac{7}{32}$ in. and, ten minutes after the removal of the weight, had completely regained its original shape, though still supported at the ends only.

It was now May. At last everything was set to go. Boats had been proved very strong, yet were down to the target weight. Moulds were being shipped to licensed builders at the rate of one set every fortnight. Production was up to three or four boats a week in England.

A keel hoisting device was then in production and improved trailers and launching trollies were also produced. The keel hoisting gear works on the screw jack principle and can be positioned and the keel released and raised within four minutes, with little effort. This undoubtedly is an important feature for many parts of the world.

In spite of annoying delays it is now, as I write this, only eighteen months since the I.Y.R.U. Trials took place and yet we now have an International Class and have successfully held European Championships this year and are organising World Championships in 1967. Tempests are being built in the U.S.A., Canada, France, Italy and Holland, and licenses are being negotiated for Australia, West Germany, Austria, Sweden, Argentina, South Africa and New Zealand. Probably no International Class has previously made such rapid progress since its debut, or been formed on firmer foundations. I hope that we can look forward to twenty or more years in which the Tempest will give sport and pleasure to people all over the world.

Part of the fleet racing in the first European Championships, Burnham-on-Crouch, England, 1966.



LOOK OUT FOR... TEMPEST

The full account by Bob Bavier Jr. of the I.Y.R.U. Two-man Keelboat trials in 1965, as a result of which Tempest was ultimately chosen as the new International Class. We are greatly indebted to Bob Bavier and "Yachting" magazine for permission to reproduce this vivid report.

I didn't really think it was possible—to create a small keelboat with the sprightliness of a planing centreboarder and at the same time the security, stability and self-righting qualities of a keelboat. It seemed more likely that such an attempt would result in a boat that was neither fish nor fowl—far too tame for those who want to go really fast yet too demanding and cranky for those who prefer keelboats. I'm happy to report that Ian Proctor's Tempest proved me dead wrong. She captures the best of two worlds and can best be described as a design breakthrough. Proctor is the well-known British boat designer and builder, mast builder and dinghy sailor.

Her unveiling came at I.Y.R.U. Selection Trials at Medemblik, Holland, 16th-19th May. Several years ago the International Yacht Racing Union announced an opening in its recognised classes for a new two-man keelboat, and in the fall of 1963 winners of a design competition were revealed. No class, of course, can be adopted from a set of lines and hence sea trials were set up for new boats built expressly for the purpose. I was at them as the American representative on the Selection Committee. Other members were Ian Loeff of Holland (Chairman), Jacques LeBrun of France, Beecher Moore of England, Bruno Bianchi of Italy and A. E. Duddok van Heel Jr. of Holland—all experienced sailors and none hampered by having personal axes to grind. Our intention was for these to be merely the first of a series of selection trials to continue through the summer in different nations. For my part, I was prepared to recommend that no boat be selected even by summer's end unless she seemed to be a truly fine type. Tempest was selected by our committee at the end of nine races over a four-day period simply because every conceivable kind of weather and sea conditions were encountered and in each race Tempest cleaned house. More important, her dominance was over a fine fleet of attractive boats. Quite frankly we fell really in love with Tempest, so much so that further trials seemed completely superfluous. Our decision was unanimous and enthusiastic. If we were wrong, we were wrong together, but I suspect instead of being wrong, we have given yachtsmen of the world a great new boat to rally around.

All boats entered were built up to the limits of 22 ft. overall length and sail area of 247 ft. plus spinnaker. All had keels weighing 495 lb. Actually most of the boats when measured proved to have exceeded the sail area limit. We made note of this, but let them sail anyway. Tempest's sail area was exactly as specified.

Hull weight of the ten new designs entered varied considerably from under 300 lb. for Jack Knight's home-built sharpie type Cobra to 797 lb. for Starlet, designed by H. E. Glaser. Tempest's bare hull was second lightest at 440 lb. Other entrants were H. E. Glaser's Champion, winner of the 1963 design competition of the I.Y.R.U.; John Westell's CVP43, looking very much like an overgrown 5-0-5; Flying Senior, a lovely looking boat by U. Van Essen, designer of the Flying Dutchman; Rapikee, designed by E. G. vander Stadt, and second in the design competition; J. M. Hannay's Satellite, a variation on the hard chine Cobra; C. & B. Silvant's Telstar which was more of day-sailing than racing type,

and P. Budde's Flying Fish. Most of them were fine looking boats.

To serve as a yardstick a fine Flying 15 was entered. Several modern spectating Dragons gave further speed comparison.

The first race was sailed in a light fluky wind. Tempest called it all wrong on the first leg to round the first mark in the ruck. On the ensuing run, beat and reach she sailed through the fleet and through some Dragons to win by 30 seconds from Rapikee. It was ultra clear already which was the best light weather boat.

The next six races were sailed in 12-20 knot winds. Some were triangles, some windward-leeward, some a combination. Some provided planing conditions, some did not. Tempest won them all except the third race of the series when she broke her rudder while leading and planing under spinnaker. A simple design modification can prevent recurrence of this one definite weakness.

Up wind, Starlet and Champion were almost matches for Tempest, but both died from inability to plane readily on reaches. Rapikee and Flying Senior were also very close to Tempest up wind, and, while they did plane, they couldn't begin to hold the British boat under planing conditions. As the series continued, Jack Knight's Cobra finally emerged as the second fastest boat. She went as well up wind as any but Tempest, and on the planing reaches could almost hold her. It was remarkable in a way that Cobra, despite weighing 165 lb. less, and despite long flat planing surfaces, could still not plane quite as readily or as fast as the fabulous Tempest. CVP43 showed fair bursts of speed, but never quite up to the other better boats. All the others were badly outclassed. The very well-sailed Flying 15 managed to beat some of the tailenders, but was 5-10 minutes behind the leader in other starts, despite conditions which were generally to her liking.

It was evident after seven races that in all sorts of normal going Tempest was quite a boat, but we decided that selection was impossible without a further test in very heavy winds and sea. There was much discussion as to where and when such trials would be held later in the year and all were agreed that no selection was possible until such a test had been made.

All races had thus far been sailed with an offshore wind, but on the third day the weather bureau forecast a new front would move in at 5.00 p.m. accompanied by 25-knot winds blowing on shore. With a hope and a prayer we postponed going out till 5.00. Almost miraculously the front moved in exactly on schedule and the seas started building at a rapid rate. The course chosen provided a one-mile reach, two-mile run, two-mile direct beat and a one-mile reach home. Wind was only 15 knots for the first two legs on which Tempest led by a wide margin. At the start of the beat, as if by prearrangement, it picked up to 20 and the seas were steep and wicked. By the end of the leg it was a good 25, yet there was the Tempest, eating it up and with an awesome lead. She planed home at an average of 12 knots, simply loving it. The six-mile course was covered in just over 50 minutes. Cobra had done surprisingly well in the rugged going, but was still over three minutes and over half a mile back. Starlet did very well up wind (about equal to Tempest) but was outclassed reaching and running to finish 3:45 behind. The others simply were not in the ball game. Rapikee, ably sailed by George O'Day in the last six races, capsized when her jibsheet jammed while tacking. George never got wet. He merely stood on the leeward side of the cockpit while his crew stood on the fin keel. In a moment she snapped back upright and continued—an amazing testimonial to the type of boats entered.

That evening our committee was virtually satisfied that a selection should be

made. Our one remaining desire was to sail not only Tempest but the other attractive contenders to learn if she felt as good as she looked. In addition to Tempest we sailed Starlet, Cobra and Rapikee. Starlet seemed very nice up wind but a bit unmanageable on reaches. Cobra was exciting to sail but not quite the boat one could fall in love with. Rapikee struck us as a fine all-round boat, but a bit unexciting. But Tempest was a joy throughout. I was fortunate in starting my sail on her in 10 knots of wind and ending up in over 20. She was lively in the lighter wind and a bomb in the heavy going. With her crew riding the trapeze she was easy to hold down. She developed no unpleasant helm on any point of sailing, was a cinch to handle, never came close to capsizing even when punished. And how she planed, both easily and very fast. It felt like 15 knots but more likely was 12.

Self bailers in wells in her self bailing cockpit sucked the spray out up wind as fast as it came in. She was always completely dry. Had we taken in solid water (we never did) the two self bailers would have been assisted by two transom drains. At the mooring her bailers are kept open and rain water finds its way into their wells.

She was perfectly laid out and equipped. The main and jib were easy to trim to cam jams. A full width traveller amidships made for most efficient trimming on all points of sailing. Her aluminium spar bent aft under the strain of the sheet so that her main assumed an ideal shape under varying wind strengths. It was impossible for any of us to fault a single detail.

I could not help but wonder why it is that a nation which can show such advanced and practical thinking in a small boat remains so relatively backward in 12-Metre development. I suspect that if the America's Cup effort were entrusted to England's small boat sailors and designers, with a free hand, an open purse and no unwanted advice from the money men, the America's Cup might well tremble on its pedestal. On a small scale, Tempest was easily as advanced as Constellation and it is hard to realise that she emanates from Sovereign territory.

By now you've got the idea that I feel Tempest is quite a boat. The entire committee did, but we wanted her to pass one more test. While her stripped hull weight of 440 lb. was probably heavy enough for strong fibreglass construction we wanted to be sure she would still perform well if it was discovered later that more weight was required. Therefore we planned one more race with Tempest handicapped by carrying 40 kilos (88 lb.) of weight above the waterline. Two bags of sand were put on board, and a course calling for three miles of beating, four miles of reaching and one of running was laid out. Wind was approximately 18 knots. I can make the description short. Tempest led by two seconds at the first windward mark, added a few seconds on the reaches, went still farther ahead on the second beat, and widened a bit more on the run home. She beat Cobra by 35 seconds and the first conventional looking boat (Starlet) by 2:15. The weight, all or perhaps some of which will doubtless be unnecessary in a production fibreglass model (the prototype was made of wood), hurt her performance a bit but not appreciably.

One more point, and I feel an important one. Tempest looks as well as she performs. John Oakley and Cliff Norbury sailed her as well or better than any boat there but all contending boats were sailed by helmsmen and crew of Olympic calibre.

Whether or not Tempest's selection will result in a real contribution to the advance of sailing—as I now feel it will—only time will tell.

TEMPEST IN "YACHTING'S" ONE-OF-A-KIND RACES FLORIDA, 1966

Extracts from a report by Bob Bavier, Jr., of the first races in which a production glassfibre Tempest officially competed with boats of other established classes:—

"... Division IV confirmed one of the accepted truths to the effect that light fin keelboats have a huge edge on their heavy displacement sisters. The Tempest, Star and Cobra easily took the measure of the much larger Shields on elapsed time, and the 110 and 5-5-5, while beaten by her boat for boat, saved their time. This is not to disparage the Shields. She is a lovely and fast displacement keelboat. The type can provide the very finest of racing and a magnificent feel, but don't get fooled into thinking they can sail as fast as a light keelboat. It's just not in the cards. The pity of the regatta is that the Shields had no boats of her own general type to compete against. The fact she came knowing the cards were stacked against her is to her credit and her sixth-place finish in a nine-boat division should not in any way discredit her.

It was in Division IV, however, that one of the major "truths" of past One-of-a-Kinds was rudely shattered. I had pronounced quite knowingly in past years that the One-of-a-Kind proved quite conclusively that a good keelboat was no match in speed for a good centreboarder. It's certainly true as regards heavy displacement keelboats, but there is now a new type which upsets the applecart. I refer, of course, to the true planing keelboat with extra righting moment provided by a trapeze. Though the Tempest could have sailed this series quite comfortably without a trapeze, the mere fact she had one permitted her to be equipped with a light (500 lb.) keel. This would still seem quite a burden to overcome when competing against centreboard boats, but she laughed at it. There were only three really true races in this year's One-of-a-Kind—the second, third and fifth. In all of these the wind ranged between 8 and 11 knots, and was reasonably steady. In the first race the wind died to nothing and then came in from a different direction. In the fourth the same thing happened, with a 180° wind shift. I feel, therefore, that for comparison purposes it is most meaningful to compare only the results in the three good races, and in so doing the record of the Tempest is quite remarkable and does upset some preconceived notions.

Let's first consider elapsed time. In the three races in question the Tempest when compared to Division III was second to the Raven in race number two and first on elapsed time in races three and five, leading every one of the vast centreboard fleet. Against Division II she was less impressive on elapsed time, but still quite something to reckon with. In race number two the E Scow, Flying Dutchman, M-20 and 5-0-5 were faster but the Tempest led all the others in this fourteen-boat division. In race number three only the E Scow, M-20 and Flying Dutchman were faster; in the fifth race only the E Scow had faster time.

On corrected time, had the Tempest been competing against Division III she would have done very well in all three "good races". In the three most conclusive tests she would have led all Division III boats on corrected time in one of them and would have been nosed out by the "14" by narrow margins in two of them. In light of this can we any longer say that a good centreboard boat is a sure bet over a good keelboat?



The International Tempest in "Yachting's" One-of-a-Kind races, St. Petersburg, Florida, 1966. Sailed by John Oakeley and Ernie Dean, she won Division IV on both elapsed and corrected time.

INTERNATIONAL TEMPEST ASSOCIATION RULES

1. TITLE

The full title of the Association shall be the "International Tempest Association".

2. OBJECTS

The objects of the Association are to promote and further the interests of the International Tempest class throughout the world:

- (a) To maintain the one-design character of the International Tempest yacht.
- (b) To co-ordinate and manage the affairs and rules of the class.
- (c) To make recommendations on the control of such matters to the International Yacht Racing Union.
- (d) To encourage and co-ordinate national and international competition in the class.

3. TERMS AND DEFINITIONS

Throughout these rules the following defined terms will be used:—

- (a) "The Association" shall mean the International Tempest Association.
- (b) A "National Association" shall mean the International Tempest Class National Association organised in individual countries and officially recognised by the Association.
- (c) "The National Authority" shall mean the officially recognised authority or organisation controlling and organising the sport of yachting and sailing on a national basis in any country.
- (d) "The Committee" shall mean the Committee of the Association, consisting of duly elected committee members and members appointed as National Association's members. For not more than two years from the formation of the class a Launching Committee shall assume temporarily the duties of the Committee (see Appendix).
- (e) "The Association Rules" shall mean the rules governing the conduct of the Association.
- (f) "The Association Register" shall mean the Register of members of the Association to be kept as hereinafter provided.
- (g) "The Class" shall mean the class of sailing yachts designed by Ian Proctor and made in accordance with his drawings and specifications, and known under the name "International Tempest".
- (h) "The Measurement Rules" shall mean the rules relating to measurement, construction and racing conditions forming an appendix to the Association Rules and governing the official building of each International Tempest and its rating as a recognised boat within the class for class racing purposes.
- (i) "The Class Register" shall mean the Register of International Tempests and their owners to be kept as hereinafter provided.
- (j) "The Register of Moulds" shall mean the register of officially measured, approved and numbered moulds and keel bulb patterns, from which the production of plastic constructed International Tempests is approved by the I.Y.R.U.
- (k) "The Register of Builders" shall mean the register of builders who have applied to the Association or I.Y.R.U. for approval as constructors of International Tempest hull, deck and component mouldings in plastic, and have been granted such approval by the official authority and are equipped with officially measured, approved and numbered moulds for the construction of plastic International Tempests and keel bulbs for International Tempests.
- (l) "The Registered Number" shall mean the sail number allocated to the boat.
- (k) "The Class Secretary" shall mean the duly elected Honorary Secretary or the duly appointed Secretary, as the case may be, of the Association.
- (n) "Certificate" shall mean a certificate to be issued, ratified and endorsed as hereinafter provided and recording:
 - (i) The registered number and initial ownership of an International Tempest and any changes in ownership.
 - (ii) the fact that such International Tempest originally complied with the class rules on completion of construction, together with such particulars as may be required by the class rules.
- (o) "Valid Certificate" shall mean a certificate in which:
 - (i) the particulars of ownership are up to date and entered on the class register.
 - (ii) any endorsement required by the class rules has been duly entered.

- (p) "Fleet" shall mean three or more registered International Tempests, not under the organisation of an already existing International Tempest class fleet, normally located sufficiently near to each other to permit regular racing between them.
- (q) "Owner" and "Joint Owner" shall mean any person or persons, corporation or association entered on a certificate as owner or joint owner of an International Tempest.
- (r) "Copyright Holder" shall mean the person, persons or corporation for the time being in possession of the copyright in the drawings and specifications of the International Tempest yacht.
- (s) "Licensee" shall mean the person, persons or corporation for the time being holding a licence under the copyright of the International Tempest yacht for the construction thereof.

4. MEMBERSHIP AND VOTING RIGHTS

- (a) The following classes of membership shall be recognised:
 - (i) Full membership.
 - (ii) Associate membership.
 - (iii) Honorary membership.
- (b) *Full Membership* shall, upon payment of the prescribed annual subscription of a National Association, be open to any Full Member of a National Association who is the owner of an International Tempest or, in the case of joint owners, to any one of them, or in the case of an International Tempest owned by a Corporation or Association to a nominated representative of that organisation.
- (c) *Associate Membership* shall, upon payment of the prescribed annual subscription of a National Association, be open to any Associate Member of a National Association who is joint owner of an International Tempest, or a member for the time being of a Corporation or Association owning an International Tempest and not being a Full Member of a National Association, or to all individuals or clubs interested in the International Tempest Class.
- (d) *Honorary Membership* shall be open to any person having an interest in the Association or in the class who is proposed by a full member and seconded by at least one member of the Committee and is elected by members of the Association at any General Meeting of the Association.
- (e) Members shall be bound by the Association rules.
- (f) Members acting as helmsmen or entering International Tempests in races which consist of or include the class shall be bound by the measurement rules.
- (g) Each full member shall be entitled to one vote at a General Meeting of the Association, or in a postal ballot. Associate and honorary members shall be entitled to attend and speak at any General Meeting, but not to vote.

5. ANNUAL CONTRIBUTIONS FROM NATIONAL ASSOCIATIONS AND FEES

- (a) The Association shall be financed by a general levy from National Associations by means of a percentage of each National Association's annual income from subscriptions. The percentage shall be determined bi-annually by the Committee of the International Association and shall apply equally to all National Associations.
- (b) The annual contribution from National Associations shall become due on 1st June.
- (c) Any National Association which has not paid its annual contribution within two months of the due date may cease to be officially recognised by the Association and lose the privileges and benefits of membership of the Association under these rules, but may be restored to the list of officially recognised National Associations at the discretion of the Committee and payment of any subscriptions due.
- (d) For 1966-67 the general levy shall be 25 per cent of annual subscription income.
- (e) The Association shall receive a fee of £50, payable by each registered builder, on each set of moulds purchased. This fee is to be stated as a separate item on any quotation, estimate, invoice or statement relating to the cost of moulds.
- (f) The Association shall receive a proportion of the Building Fee on each Tempest built, amounting to 0.5 per cent of the average price of the boat in standard form, without sails, in Britain. The amount of the fee shall always be assessed on this basis and will be reviewed, and if necessary revised, by the Association every two years as from 1st October, 1965. Until November 1967, the fee due to the Association on each Tempest built shall be £4.

6. MANAGEMENT

- (a) The affairs of the Association shall be managed by the Committee, which shall be the only body with power to make recommendations to the International Yacht Racing Union for changes in the measurement rules.
- (b) The Committee shall consist of not less than six and not more than ten full members of the Association elected annually at a General Meeting of members, or by postal vote, as elected committee members. In addition, each nation with four or more fleets shall be entitled to appoint one full member of the Committee as national committee member. Each nation with ten or more fleets shall be entitled to appoint two full members to the Committee as national committee members. The Committee shall have powers to co-opt any person to assist it whether a full member of the Association or not, but such person shall have no vote in committee.
- (c) No member shall serve on the Committee as an elected or national committee member for more than three years, at the end of which period he shall retire, but shall be eligible for re-election after an interval of one year and may be co-opted. Members of the Launching Committee may after the formation of the Class Association serve a full term of three years as duly elected or national committee members.
- (d) The Committee need not fill a vacancy arising in the Committee unless the total number of committee members has dropped below the minimum of six. Committee members appointed to fill vacancies shall remain in office until the expiry of the term of office of the person whose position they have filled.
- (e) At its first meeting, to be held immediately after the Annual General Meeting of the Association, the Committee shall:
 - (i) Elect one of its members to act as Chairman of the Association for the following year.
 - (ii) Elect an Honorary Secretary or appoint a Secretary who shall keep correct minutes and records of all Committee and General Meetings, together with the Association register and the class register and shall be responsible for communicating the decisions of the Committee to members of the Association and, where directed by the Committee, to owners and joint owners not being members of the Association, in such terms as the Committee may prescribe.
 - (iii) Elect an Honorary Treasurer who shall have charge of the funds of the Association; make such disbursements as the Committee shall direct; keep an accurate record of the financial affairs of the Association; and present an annual financial statement at each Annual General Meeting. The Secretary or Honorary Secretary may fulfil the function of Treasurer.
 - (iv) Appoint an Auditor who shall certify the annual financial statement.
 - (v) Elect a rules and technical sub-committee which shall be responsible for advising the Committee and Association members upon the interpretation of the Association rules, for considering requirements for amendments or additions to such rules or to the class rules and for making recommendations to the committee.
 - (vi) Decide the time and place for the next meeting of the Committee and cause the Honorary Secretary to ensure that notice of this meeting be sent to all members of the Committee.
- (f) At meetings of the Committee five of the elected members present shall form a quorum.
- (g) The Committee shall have the power to make recommendations to the members in General Meeting, or by post, for alterations in or additions to the Association rules.
- (h) The Committee shall be responsible for the appointment of official class measurers and for the compilation and distribution of measurement forms, provided that no responsibility shall rest with the Committee in respect of errors made by measurers.
- (i) The Committee shall arrange an annual world championship of the class and co-ordinate such national or regional championships as may be required and all matters pertaining to international championships shall be settled by the Committee in consultation with the sponsoring club or clubs and/or the relevant national authority.
- (j) Owing to the difficulties of attendance at meetings of an international committee, at least six weeks' notice of the date, place and agenda for any such meeting must be given in writing by the Secretary to each committee member. Business will mainly be conducted by correspondence which shall always be circulated through the secretariat. Any committee member not answering a motion communicated to him in writing within six weeks of the date of sending shall be deemed to have agreed to such motion. All communications to countries outside that of the Secretariat shall be sent by airmail.
- (k) Acceptance of a certificate by an owner or joint owner shall ipso facto render him or them subject to the jurisdiction of the Association or the Committee in any matter pertaining to class rules.

7. POWERS OF THE COMMITTEE

Subject to the provisions of these rules and in particular to the object of the Association as expressed in rule (ii), the General Committee shall be empowered to perform all functions of management and administration. The making of payments and receipt of monies shall be validly evidenced only by the signature of the Treasurer or his deputy as appointed by the Committee and payments or receipts of monies exceeding the sum of £100 sterling shall require the signature of the Chairman and Secretary or Treasurer.

8. CONDUCT OF MEETINGS OF THE ASSOCIATION

- (a) The Annual General Meeting of the Association shall be held each year either in London or at international championship or other regatta of the class, or any other place judged by the Committee to be most convenient to the majority of members of the Association, the precise date, time and place being at the Committee's discretion.
- (b) A Special General Meeting shall be called by the Chairman or class secretary upon receipt by the class secretary of a request in writing signed by not fewer than fifteen full members of the Association.
- (c) At least ten weeks' notice in writing shall be given to members of any General Meeting.
- (d) At any General Meeting or Committee Meeting decisions, other than those concerned with the measurement rules, shall be carried by a majority vote. Voting shall be by a show of hands unless a poll is demanded by not fewer than three of the full members present. At any meeting the Chairman shall have a casting vote. The secretariat shall be responsible for circulating all members, or in the case of Committee Meetings, all committee members, with the result. In the event of a postal ballot, all returns shall be made to the secretariat within four weeks of the date of posting the ballot paper.
- (e) Any General Meeting of the Association, twenty-one shall form a quorum.
- (f) At any General Meeting of the Association, a decision to recommend to the I.Y.R.U. a change in or addition to the measurement rules shall require a majority of two-thirds.

9. ACCOUNTS

- (a) The Committee shall cause true accounts to be kept giving full particulars of:
 - (i) All monies, assets and liabilities of the Association.
 - (ii) All monies received and expended by the Association and of the matters in respect of which such receipts and expenditure arise.
 - (iii) All sales and purchases of goods by the Association.
- (b) The Committee shall cause to be prepared and laid before the members at every Annual General Meeting of the Association an annual financial statement.
- (c) A copy of the annual financial statement, duly audited, which is to be laid before the members in General Meeting, shall not less than twenty-one days previous to such General Meeting be sent to every full member of whose address the Committee is aware.

10. PROTECTION OF 'ONE-DESIGN' AND ISSUE OF CERTIFICATES

- (a) The 'one-design' character of the International Tempest class yacht throughout the world and the quality of the yachts shall be controlled by limiting building rights to selected builders in each country from which application is made to the Class Association. The number of builders may vary in each country, but where a territory is adequately served by one builder, another will not normally be granted rights to build or obtain moulds for plastic construction. Licences to build shall be reviewed annually and may be withdrawn. All applications for licences to build shall be sent direct to the Association, which will refer these to the National Yachting Authority of the country concerned, asking such Authority to advise on the most suitable of these builders, whose premises and production facilities shall then be inspected by Lloyds or an equivalent Classification Society (at the builder's own expense). If this inspection is satisfactory, and approval is given by the Association, I.Y.R.U. Holdings Ltd. shall be requested by the Association to issue a licence to the builder, under the terms agreed between the I.Y.R.U. and the Copyright Holder, to produce International Tempests conforming with the official plans, specifications and measurement rules.
- (b) No yacht shall be entered on the class register as an International Tempest, or be eligible for a certificate as an International Tempest unless the hull shell, and the other component mouldings, are produced by a builder approved by the I.Y.R.U. and entered on the Association register of builders.

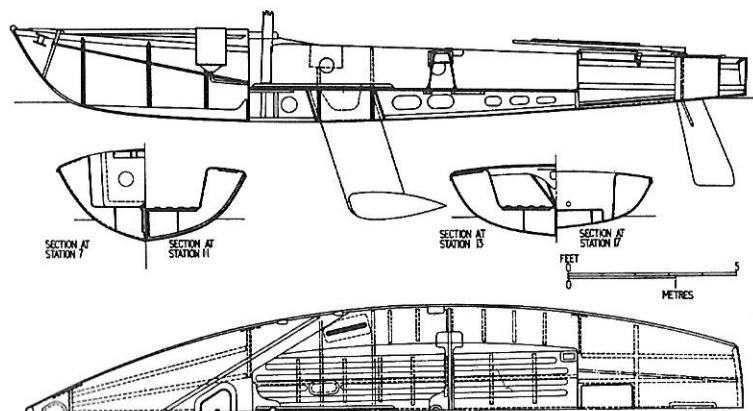
INTERNATIONAL TEMPEST ASSOCIATION RULES (Continued)

- (c) No yacht built of reinforced plastic shall be entered on the class register as an International Tempest or be eligible for a certificate as an International Tempest unless built to the official plans and specifications from component mouldings produced on officially measured, approved and numbered moulds, issued on the authority of the I.Y.R.U. and entered on the register of moulds.
- (d) The Association shall collaborate with the I.Y.R.U. and National Authorities in the allotment and issue of serial class numbers for International Tempests as they are built, and in the keeping of the class register, register of builders and register of moulds.
- (e) Certificates shall be obtainable from the National Yachting Authority, which may delegate its authority to the Association or a National Association, upon production of a measurement form properly completed by a national measurer or an official class or club measurer, showing the boat to be within the requirements of the International Tempest measurement rules.
- (f) Certificates shall remain valid only so long as:
 - (i) the boat continues to comply with the measurement rules.
 - (ii) measurements of new or replacement sails are officially entered on the certificate.
- (g) The responsibility for ensuring the validity of certificates issued in respect of newly built boats shall rest with the builder.
- (h) The responsibility for ensuring the continuing validity of certificates shall rest with the owner. When ownership changes it shall be the responsibility of the new owner to have the necessary endorsement completed upon his certificate.

APPENDIX

The Launching Committee shall be a caretaker government of the class for not more than two years.

Its terms of reference shall be to inaugurate the Committee in accordance with the constitution and to promote the welfare of the class.



The original Tempest sailed by Ian Proctor and his son Keith in Cowes Week Regatta 1966. The International One-Design Class yachts in the background were all overtaken within a few minutes.

RULES (Continued)

5. BULKHEADS

Transverse watertight bulkheads shall be built in at each end of the cockpit. The aft bulkhead shall be at 1525 mm. (tolerance ± 10 mm.) from the vertical centreline of the transom. The forward bulkhead shall be at 4520 mm. (tolerance ± 10 mm.) from the vertical centreline of the transom. Longitudinal bulkheads shall be built in between the side decks and the cockpit floor and extending between the forward and aft cockpit bulkheads. A watertight transverse bulkhead shall be built in to the bow to provide a compartment which shall be self-draining, to accommodate the forestay and jib tack fittings. A watertight buoyancy compartment, shall be formed between the two forward bulkheads. The two forward bulkheads may each be pierced by a hole of 16 mm. maximum diameter, such holes to be interconnected by a watertight tube securely supported between the bulkheads. A second hole, of not more than 20 mm. and not less than 12 mm. diameter, is permitted in the main forward bulkhead only, making a watertight connection with the spinnaker well drain tube. The watertightness of the forward buoyancy chamber shall be unaffected by the permitted tubes, inlets and outlets (see rule 8(a)). Not more than two inspection ports of not more than 110 mm. diameter and closed in a substantially watertight manner whilst sailing are permitted in the forward cockpit bulkhead, and not more than two inspection ports of not more than 110 mm. diameter are permitted in each of the longitudinal bulkheads.

Two pipes of maximum internal diameter 55 mm. shall interconnect the aft cockpit with the transom to provide additional drainage from the cockpit.

6. COCKPIT

The cockpit floor shall make a watertight joint between the forward and aft transverse bulkheads and the longitudinal bulkheads. At the forward bulkhead the depth of the cockpit measured from the gunwale to the centreline of the cockpit floor, as shown on the measurement plan, shall be 375 mm. (tolerance ± 10 mm.). At the aft bulkhead the depth of the cockpit, measured from the gunwale to the centreline of the cockpit floor, as shown on the measurement plan, shall be 295 mm. (tolerance ± 10 mm.). Width of the cockpit floor 270 mm. aft of the main forward bulkhead shall be 973 mm. (tolerance ± 5 mm.). The width of the cockpit floor at the aft bulkhead shall be 1065 mm. (tolerance ± 5 mm.).

Two inspection ports as shown on the plans shall be provided. These ports shall be closed in a watertight manner whilst racing.

In order to provide for self-bailing, not more than two watertight traps, not exceeding 110 mm. x 180 mm. shall be formed in the cockpit floor at the aft outboard corners.

7. SHROUD PLATES

Main shrouds should be connected to the shroud plates which shall be positioned in accordance with the measurement plan.

8. DECKING

(a) The Foredeck

The foredeck shall extend unbroken from the stem to the forward end of the cockpit but shall have an aperture as shown on the plans for a spinnaker stowage well which shall form a watertight joint with the foredeck and shall be fitted with a drain pipe of not less than 12 mm. nor more than 20 mm. internal diameter into the cockpit. An additional aperture of maximum dimensions 205 mm. x 160 mm. is permitted forward of the bow bulkhead. This aperture shall be substantially closed but not necessarily watertight when the boat is racing. From a point on the upper edge of the forward cockpit bulkhead 365 mm. (tolerance ± 5 mm.) from the centreline, the foredeck shall extend in a straight line outward and aft to a point as shown on the plans. The curvature of the foredeck, measured at the forward cockpit bulkhead as shown on the measurement plan, shall be 145 mm. (tolerance ± 10 mm.).

(b) Side Decks

Width measured at any place at right angles to the tangent to the outboard edge of the deck to the extension of inner face of longitudinal bulkhead shall be 327 mm. (tolerance ± 5 mm.). Side decks shall slope downwards towards the gunwale, so that the inboard edge of the deck is 26 mm. above the outboard edge as shown on the measurement plan (tolerance ± 10 mm.).

(c) Aft Decks

The aft deck shall extend from the aft cockpit bulkhead to the transom but shall be pierced by a hatch opening, dimensions 470 mm. long x 450 mm. wide (tolerance ± 5 mm.) securely closed by a hatch cover when racing. There shall be an opening to the rudder housing slot,

RULES (Continued)

dimensions 380 mm. (tolerance ± 15 mm.) long x 50 mm. (tolerance ± 7 mm.) wide. The curvature of the aft deck measured at the aft cockpit bulkhead, as shown on the measurement plan, shall be 45 mm. (tolerance ± 10 mm.).

9. COAMINGS

Coamings not less than 19 mm. in perpendicular height shall extend from a point on the centreline 1320 mm. (tolerance ± 15 mm.) from the stemhead to points not more than 50 mm. from the edge of the deck and not more than 50 mm. forward of the shroud plates.

10. GUNWALE RUBBING BEAD

Gunwale rubbing bead of timber, plastic or resilient material 16 mm. thickness (tolerance ± 3 mm.) shall extend unbroken from a point not more than 130 mm. from the bow (excluding the stemhead fitting) to a point not more than 25 mm. from the transom (excluding overlap of aft deck).

11. KEEL

- (a) The keel shall consist of a mild steel fin to the shape shown on the drawing which shall be checked by a template with a lead bulb cast from an officially registered pattern issued by the I.Y.R.U.
- (b) The minimum thickness of the mild steel finished fin is 9.5 mm. and the maximum thickness is 11 mm.
- (c) The maximum depth of exposed portion of the keel, measured vertically from the point where the aft edge of the fin meets the underside of the hull, to the lowest point of the fin or bulb, is 900 mm.; minimum depth of keel, at the same measurement point, is 865 mm. The fore and aft edges of the fin shall be parallel and the width of the exposed portion, measured as on the measurement plan, shall be 508 mm. (tolerance ± 5 mm.).
- (d) The maximum chamfer at the leading edge of the fin is 80 mm. and the maximum chamfer at the aft edge of the fin is 105 mm.
- (e) The fin shall be arranged so as to be removable from the hull.
- (f) The shape of the bulb shall be checked with five metal templates placed as shown on the measurement plan. These templates have alternative tolerances for sheathed and un-sheathed bulbs (see rule 11(i)). The maximum difference is 2 mm.
- (g) The lead bulbs shall be weighed before fixing to the fin and their weight entered on the measurement certificate. The maximum weight is 189 kg. The minimum weight is 181 kg.
- (h) The weight of fin and bulb together shall not be more than 232 kg. nor less than 227 kg.
- (i) The fin may be galvanised, zinc sprayed, zinc coated, plastic coated or painted. Other forms of plating are prohibited. The lead bulb and the fin keel adjacent may be sheathed with a suitable reinforced plastic material for protection against damage, but such reinforced plastic shall not extend more than 25 mm. above the lead bulb and the radius in the angle between the fin and any part of the upper edge of the bulb shall not be greater than 3 mm. Keels sheathed in this way shall comply with the weight rule 11(h) and rule 11(f) controlling shape.
- (j) The aft end of the keel slot shall be not less than 3290 mm. from the transom measured along the centreline of the hull. The forward end of the keel slot shall be not more than 3865 mm. from the transom measured along the centreline of the hull.
- (k) The fore and aft position of the keel may be adjusted within the limits of the keel slot, but the position of the keel may not be altered whilst racing. The forward edge of the fin, where it meets the underside of the hull, shall never be more than 3865 mm. nor less than 3805 mm. from the transom, measured along the hull on the centreline.

12. RUDDER

- (a) The rudder shall be of glass reinforced plastics or wood.
- (b) The rudder shall be removable while the boat is afloat.
- (c) The profile of the rudder blade shall conform to the official template, the edge of the blade at no place being more than 7 mm. from the edge of the template.
- (d) The sectional shape of the rudder blade is optional but at its maximum section shall not exceed 55 mm. nor be less than 45 mm.
- (e) The design of the tiller and extension is optional.
- (f) With the rudder in the fore and aft plane of the hull the distance from the forward upper corner of the blade to the extension of the vertical centre line of the transom shall be 630 mm. (tolerance ± 20 mm.).

13. LIFTING EYES

Lifting eyes shall be located as shown on the drawings, and shall be secured to the hull structure and shall be sufficiently strong to allow the boat, complete with keel and all sailing gear to be lifted by attachment to these eyes.

14. WEIGHT

- (a) The hull, in dry condition to the measurer's satisfaction, including essential fixed fittings and buoyancy apparatus enclosed within the bulkheads, shall not at any time be less than 217 kg. For the purposes of this rule the essential fixed fittings include the stemhead fitting, stem-band (if fitted), forestay plate, jib tack plate, jib furling gear, drain tubes, lifting eyes, mast step, shroud plates, jib fairleads and tracks, trapeze gear fairleads, jib sheet snubbing winch (if fitted), cleats, mainsheet traveller and track, mainsheet lead and cleat, bridge deck struts, keel supporting angles, self-bailers, spinnaker sheet fairleads, hatch clips, hatches, rudder frame clips and toestraps with securing plates. No other fittings or gear shall be weighed with the hull.
- (b) If the weight of the hull is less than 217 kg, metal weight correctors of total maximum weight not exceeding 15 kg, shall be fastened approximately to the centre of the cockpit floor. The weight number and position of these correctors shall be noted on the measurement form. A certificate shall not be issued if the hull is lighter than 217 kg.
- (c) Sailing weight in dry condition shall never be less than 469 kg. For the purposes of this rule "sailing weight" shall be taken to be the weight of hull with essential fixed fittings, keel with securing bolts, mast with complete standing and running rigging, boom, sheets, jib furling lines, mainsheet traveller and control lines, one complete set of sails with battens, rudder, tiller, and spinnaker boom. All these items shall be weighed with surfaces free of evident moisture.

15. MAST POSITION

The aft edge of the mast, if extended downwards, shall not be further aft than the forward edge of a black line of 10 mm. minimum width, marked on the cockpit floor of a minimum distance of 4190 mm. from the outside of the transom (excluding overlap of deck) measured parallel to the baseline. The mast shall be stepped above the cockpit floor, aft of the forward main bulkhead as shown on the drawings.

16. MAST

- (a) Material, method of construction and design of mast is optional. It shall be rigged with a standing forestay on the centreline of the hull ahead of the luff of the jib and capable of supporting the mast with the sails lowered. The extension of the line of the luff of the jib shall meet the centreline of the foredeck, or its extension, at a point 6390 mm. from the centreline of the transom (tolerance ± 45 mm.) measured parallel to the deck.
Any taper on the mast shall not extend below a point 1560 mm. from the extreme upper end. The section of the mast shall be substantially constant below this point, excluding openings for sail entry and fittings.
- (b) The minimum weight of mast shall be 14.3 kg. complete with normal fixed fittings but excluding running and standing rigging. The minimum dimensions of the mast section between the black bands specified in 16(g)(i) and 16(g)(ii) are 82 mm. fore and aft and 72 mm. athwartships.
- (c) The minimum height of the centre of gravity of the mast, in the same condition as in (b) with fittings is 4220 mm. from the extreme lower end.
- (d) Permanently bent masts and rotating masts are prohibited.
- (e) The flexibility of the mast is limited thus: The mast shall be supported at the black bands specified in 16(g)(i) and 16(g)(ii). With the mast turned so that the normal fore and aft axis of its cross-section is approximately horizontal, a weight of 40 kg. shall be suspended from the mast, midway between the two supporting points, and the deflection measured at the point of suspension of the weight shall not be more than 90 mm. With the mast turned so that the normal fore and aft axis of its cross-section is approximately vertical with the sail track uppermost, a weight of 100 kg. shall be suspended from the mast midway between the two supporting points and the deflection measured at the point of suspension of the weight shall not be more than 165 mm. During these deflection tests all rigging shall be fully slackened.
- (f) The makers of all masts completed after December 1965 shall declare the bare mast weight by legibly impressed figures stamped within 310 mm. of the lower black band, and in an adjacent position, and shall also declare, by legibly impressed figures, the distance of the centre of gravity from the extreme lower end of the mast.

- (g) The extreme lower end of the mast shall be located not more than 20 mm. above the level of the cockpit floor in way of mast.
- (h) Three black bands of 10 mm. minimum width shall be painted on the mast thus:—
 - (i) with its upper edge 1155 mm. (tolerance ± 5 mm.) from the extreme lower end. The top of the boom at the gooseneck shall not extend below this mark.
 - (ii) with its lower edge not more than 5945 mm. above the upper edge of (i). The extended line of the luff of the jib shall not meet the mast above this mark. The bearing point of the eye or sheave which supports the spinnaker halyard may extend for a radius of 153 mm. from the lower edge of this black band.
 - (iii) with its lower edge not more than 7620 mm. above the upper edge of (i). The mainsail luff shall not extend beyond this mark.
- (i) There shall be a stop on the mast to prevent the upper edge of the boom extending below the upper edge of black band No. 1.

17. MAIN BOOM

Main boom with fixed fittings shall be able to pass through a circle 90 mm. in diameter and shall be of uniform section of minimum dimensions 63 mm. x 53 mm. Permanently bent booms are prohibited. A black band shall be painted on the boom with its inner edge 3380 mm. distant from the general line of the aft side of the mast, excluding any local curvature, measured along the top of the boom to the mast. The foot of the mainsail shall not extend beyond this mark. The boom shall be fitted with a pin, screw, or bolt at or near its forward end to secure the top of the mainsail; the centre of this pin, screw or bolt shall be not more than 10 mm. above the line of the upper surface of the boom (see rule 19(b)).

18. SPINNAKER BOOM

Maximum overall length, including fittings shall be 2300 mm.

19. SAILS

- (a) Sails shall be of woven material, except that one unwoven transparent panel is permitted in any sail; this shall not exceed 0.28 sq. m. and may not be less than 150 mm. from any edge of the sail.
- (b) **Mainsail**
The maximum measurements of the mainsail are shown on the sail measurement plan. The mainsail shall not extend beyond the upper edge of the black band specified in rule 16(g)(i) or beyond the lower edge of the black band specified in rule 16(g)(iii). The mainsail foot shall not extend beyond the inner edge of black band on the main boom specified in rule 17. The length of the leech (the distance between the extreme lowest point of the sail directly under the centre of the clew cringle and the upper forward corner of the headboard) shall not exceed 8300 mm. The headboard shall not exceed 130 mm. measured at right angles to the luff. The maximum number of battens is four, maximum length 1000 mm., maximum width 50 mm., dividing the leech into approximately equal parts.
At the junction of the luff and foot of the mainsail a tack eye or cringle shall be provided, with its centre within 20 mm. of the edge of the sail, including roping. The tack shall be secured to the boom by means of the tack pin, screw or bolt (see rule 17).
The curve of the leech is not controlled, but the total width of the mainsail is measured in three places, representing quarter, half and three-quarter heights on the sail. When these measurements are taken, the sail shall be smoothed out, in dry condition. All measurements shall be taken over the full width, including roping and any hollows in the leech shall be bridged by straight lines. In finding the half luff, quarter luff and three-quarter luff points, the top forward corner of the headboard shall be placed over the centre of the tack cringle, with the two halves of the luff coinciding, the fold so formed indicating the half luff point. This fold is then placed over the top forward corner of the headboard and tack cringle together and the two folds thus produced indicate the quarter and three-quarter luff points. A similar procedure is used to determine the half leech, quarter leech and three-quarter leech points; the top forward corner of the headboard is first placed over the centre of the clew cringle, with the sail smoothed out, the fold so formed indicating the half leech point. This fold is then placed over the top forward corner of the headboard and centre of clew cringle together, and the two folds thus produced at the leech indicate the quarter and three-quarter leech points. The maximum distance from three-quarter luff point to three-quarter leech point is 1430 mm. The maximum distance from half-luff point to half leech point is 2360 mm. The maximum distance from quarter luff to quarter leech point is 3050 mm.

RULES (Continued)

The class insignia, a letter "T", must be sewn on each side of the mainsail and must be at least 380 mm. in height.

The class number of the boat is to appear below the insignia, together with the national letter, also 380 mm. in height.

(c) Jibs

The jib is to be measured according to the international sail measurement instructions. The maximum measurements of the jib are shown on the sail measurement plan and are as follows:—

Maximum length of luff	6350 mm.
Maximum length of foot	2490 mm.
Maximum length of leech	5980 mm.

A round is permitted in the foot of the jib, but not in the leech. The round in the foot shall have a continuous fair curve when new and the maximum measurement between the straight line joining the centres of the tack and clew cringles and the foot of the sail shall not exceed 140 mm. No elastic material or lines for regulating the tension in the sail are permitted in or attached to the foot of any jib.

(d) Spinnakers

Not more than two spinnakers may be carried in the boat whilst racing. Spinnakers shall be three-cornered and symmetrical about a line joining the head to the centre of the foot. No artificial stiffening at the corners or along the edges other than the usual fabric, hems, patches or fabric reinforcements are allowed. The fitting of luff wires or other means of adjusting luff or leech tensions is prohibited. The surface of the sail shall be of continuous fabric, with no vents or artificial apertures.

The measurements shall be according to the measurement diagram. The luffs, A E G J C shall not exceed 6000 mm. when pulled out straight under a tension of approximately 5 kg. The measurement AB shall be taken with the sail pulled taut along the line of measurement, with sufficient tension to remove all creases and must not exceed 6500 mm.

The width control measurements shall be taken in accordance with the following procedure. The sail shall be folded in half about its vertical centreline, by folding the foot at its midpoint and applying sufficient tension to remove creases from the folded foot, the luffs and the centre fold from the mid-point of the foot to the centre of the head cringle, with the sail on an approximately flat surface. Then, measuring round the perimeter of the folded sail, with sufficient tension applied to remove creases from the edge under measurement, the points E G J shall be marked upon the luffs and D F H upon the centre fold, in accordance with the dimensions on the diagram.

Having clearly defined the points D F H E G J, the cross measurements DE FG HJ shall be taken with sufficient tension to eliminate creases along the line of measurement. All dimensions are maxima and must not be exceeded at any time. The measurement FG must at no time be less than the 1900 mm.

Sail numbers of minimum height 380 mm. must be positioned on both sides of the sail below measurement station DE and above measurement station HJ.

(e) Identification

Each sail shall have permanently fixed near to its tack, or in the case of a spinnaker near one lower corner a serial numbered official International Tempest Sail Label. The number of this sail label shall be entered on the certificate. The official sail labels are obtainable from the International Tempest Association Secretary, price 10s. each.

20. BUOYANCY

Owners are responsible for maintaining the watertightness of the buoyancy compartments and ensuring that all drain sockets and other openings through the buoyancy compartments are watertight whilst racing. The hatch into the aft buoyancy compartment need not be entirely watertight. Buoyancy units, not being air bags, certified by the builder to have at least 150 kg. minimum positive buoyancy, are to be secured in the forward buoyancy compartment. Buoyancy units, not being air bags, certified by the builder to have at least 150 kg. minimum positive buoyancy, are to be secured in the centre and/or aft buoyancy compartment with no part more than 1370 mm. from the aft bulkhead.

21. PROHIBITIONS

The following are prohibited: inside ballast or ballast carried by the crew; winches, jacks or other devices for altering the position of the keel whilst racing; mastjacks; any contrivance for altering the fore and aft of lateral position of the jib tack whilst racing; any apparatus or contrivance extending outboard from the hull, spars, rigging or attached to the crew, other than as specified in rule 22, the purpose or effect of which is or may be to support or assist in

supporting a member of the crew outboard or partially outboard; projections beyond the skin other than gunwales, toe chocks, spinnaker sheet cleats, stemhead fitting, keel, two self-bailers, stemband, keel band, drain plugs, name plates, non-slip material, jib sheet lead plates and mooring fairleads, none of which may project horizontally beyond the gunwale rubbing bead.

22. TRAPEZE

One trapeze for the crew only is permitted. The trapeze harness or belt shall float its own weight when wet and may not weigh more than 3.5 kg. In local regattas where three persons may be allowed on board under rule 24, the trapeze shall not be used.

23. EQUIPMENT

The following equipment shall always be carried on board whilst racing: one paddle, at least 1000 mm. in length; one hand bailer or bucket; one anchor minimum weight 2 kg. with at least 15 metres of line or cable; a life jacket or buoyancy vest for every person on board.

24. CREW

There shall be two persons on board when racing (except for local races where three persons may be allowed by the sailing instructions provided this is advertised in the notice of the race).

25. REGISTERED NUMBER

The registered number shall be obtained from the National Authority and each country shall start its numbering from "one". The number shall be shown in figures of 5 mm. minimum height on the official plate, fixed approximately on the centreline of the forward face of the aft bulkhead. The builder's serial number and the number of the mould from which the shell came shall be permanently shown on the plate.

26. MEASUREMENT CERTIFICATE

No boat is entitled to race or sail as an International Tempest unless the owner holds a valid certificate in his own name as prescribed by the I.Y.R.U. This certificate can be obtained in the following way:—

- Measurements forms and lists of approved measurers can be obtained from the National Authority.
- In the case of a new boat, or one so substantially reconstructed or repaired as to require remeasurement, by sending a measurement form properly completed and signed by an official measurer to the Secretary of the National Authority. A receipt for building fee shall accompany such application.
- On change of ownership by sending the old certificate to the Secretary of the National Authority.
- Replacement of substantially altered sails and replacement keels must be measured and the details entered on the relevant portion of a measurement form, which must then be sent, together with the certificate to the Secretary of the National Authority.
- Replacement or rebuilt masts, main booms, spinnaker booms and rudders must be submitted for measurement before being used. A measurement form need not be used for such items.

27. BUILDING FEE

The building fee, shall be on the basis of 2.5 per cent of the average retail price of the boat in standard form, without sails, in Britain. This fee shall incorporate the designer's fee of 1.5 per cent, the International Tempest Association administration fee of 0.5 per cent and the International Yacht Racing Union administration fee of 0.5 per cent.

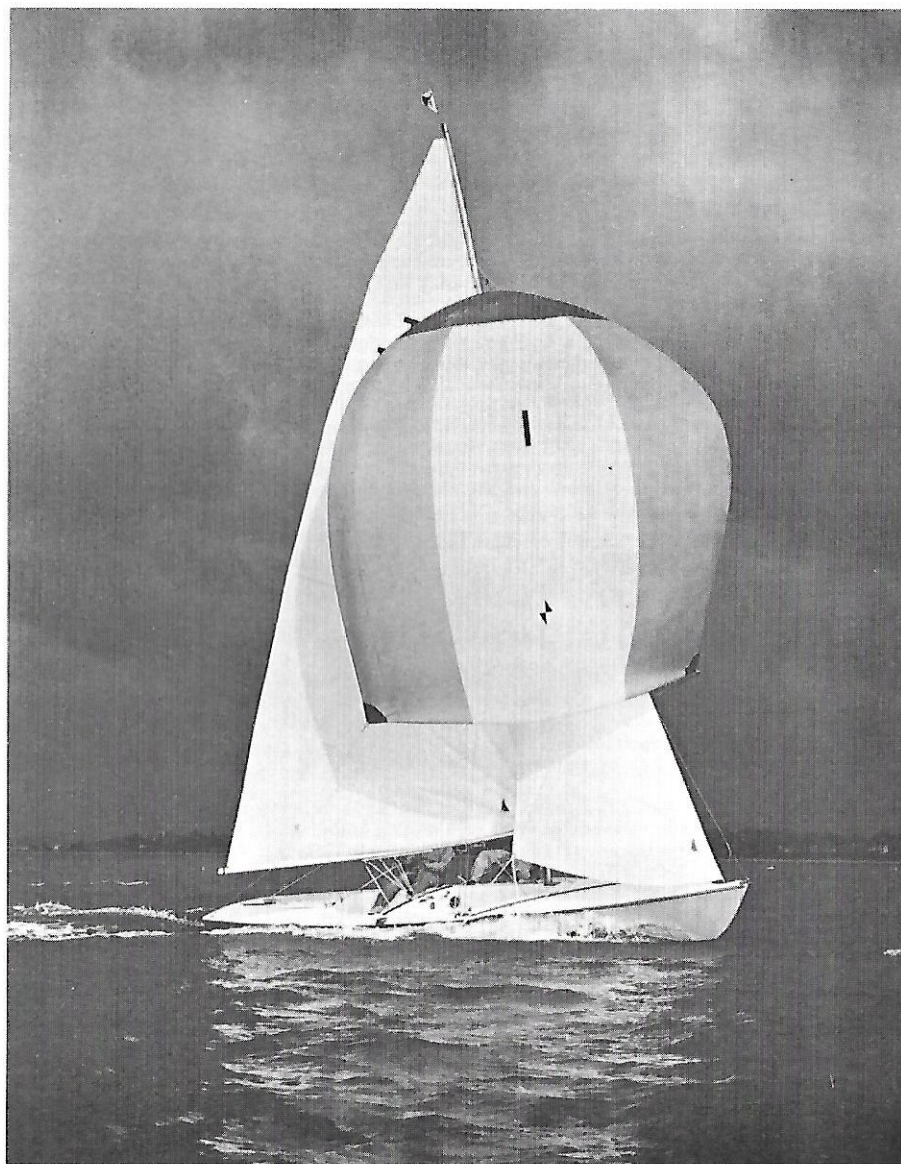
The amount of the building fee shall always be assessed on the above basis and will be reviewed and if necessary revised by the I.Y.R.U. on the recommendation of the International Tempest Association every two years as from 1st October, 1965. Until November 1967, the building fee is £20. Payment is due to the Honorary Secretary, International Tempest Association, 17 Bywater Street, Chelsea, London, S.W.3.

28. TRANSLATION OF THE RULES

In case of differences in the interpretation of these rules if translated into other languages, the English text shall prevail.

29. RE-MEASUREMENT

All certificated boats are liable to re-measurement at any time at the direction of the National Authority or race committee. If a builder is found to have signed a measurement form for a boat that did not measure correctly he would be liable to rectify the error, and may have his licence as a builder withdrawn.



The first plastic prototype, sailing on Southampton Water, November 1965. This boat, named "Tempestuous" tied for third place in the 1966 European Championships.

RIGGING AND SAILING AN INTERNATIONAL TEMPEST

GENERAL NOTE

The original Tempest design provides for a highly efficient flexible rig, but for correct performance and tolerance of the strains imposed on the mast, it must be treated with understanding. This rig has been used in extremely tough conditions, much beyond what it would normally have to stand, but maladjustment can cause incorrect bending of the mast.

In order to understand the operation of this rig it should be explained that the correct mast bend is produced by tension in the leech of the mainsail (pulling the masthead aft), and forward thrust from the boom (pushing the lower part of the mast forward); these bending forces on the mast are assisted by compression loads at the hounds from jib luff and shrouds. It follows that, unless the bending forces mentioned are operating correctly, the mast will not perform properly. To maintain these bending forces it is essential that (a) the kicking strap or boom vang is adequately tensioned and (b) that the kicking strap is assisted in eliminating twist from the mainsail by means of the mainsheet control gear provided.

The most difficult conditions for a flexible mast are when running in fresh winds, particularly in rough water. Under these conditions the tension in the leech of the mainsail may no longer be pulling the masthead aft and the thrust from the boom is exerting little forward push on the mast at the gooseneck. The head of the mast may, therefore, be bent forward, causing the lower part of the mast to flip aft. The time when this is most likely to occur is if the boat runs fast into the back of a wave, suddenly slowing up.

To avoid these conditions bear in mind the following points:—

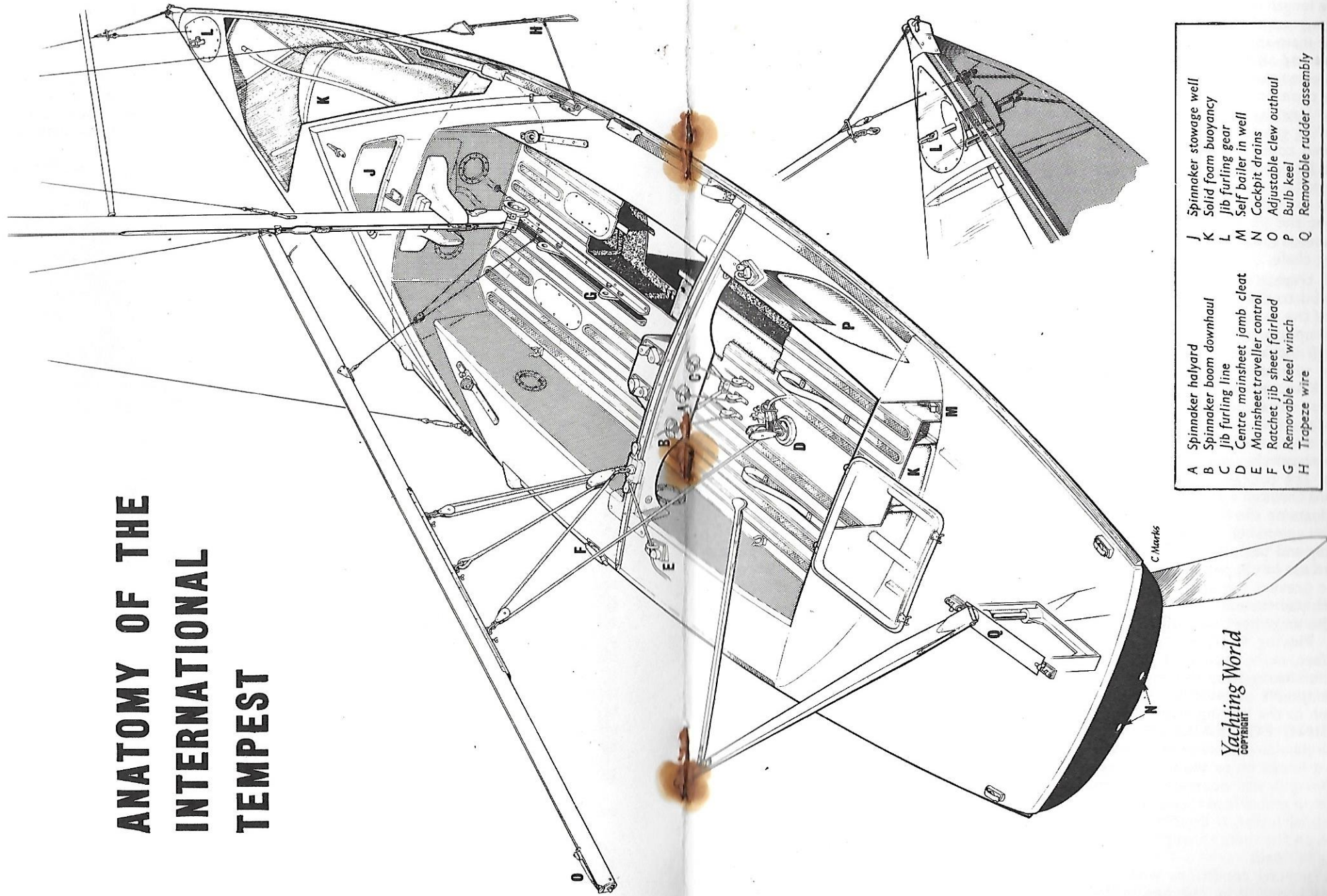
- (a) Do not ease out the mainsail so far that the leech tension no longer pulls the head of the mast aft but only sideways, or even (if there is excessive twist), forwards.
- (b) Always tension the kicking strap (boom vang) quite heavily.
- (c) Keep the rigging fairly tight, always remembering to tension the jib luff by means of the halyard lever. This will prevent the boom being squared off too far and losing all forward thrust at the gooseneck.
- (d) Allow the mast to bend forward at deck level about $1\frac{1}{2}$ in. (40 mm.).
- (e) Ensure that the mast can never bend aft at deck level. A stop or gate should prevent the mast bending aft at this level, and in strong winds, chocks may be used between the gate and the aft side of the mast, to give it slight forward bend.
- (f) As a safeguard against the mast flipping aft under heavy compression loads (if the controls are not used quite correctly) the main spreaders between the mast and the shrouds should be pinned in place and not allowed to pivot. The diamond spreaders should also be angled aft slightly to induce forward mast bend (this will be standard on the masts made by some manufacturers).

RIGGING

This is really quite straightforward, but the following points should be remembered:—

- 1. The mast should be set up so that when the boat is level there is about 10 in. (250 mm.) of aft rake between the head of the mast and the mast at deck level. The aft edge of the mast, at the bottom, should be approximately $7\frac{1}{2}$ in. (19 mm.) from the forward cockpit bulkhead.

ANATOMY OF THE INTERNATIONAL TEMPEST



- | | | | |
|---|-----------------------------|---|---------------------------|
| A | Spinnaker halyard | J | Spinnaker stowage well |
| B | Spinnaker boom downhaul | K | Solid foam buoyancy |
| C | Jib furling line | L | Jib furling gear |
| D | Centre mainsheet jamb cleat | M | Self bailer in well |
| E | Mainsheet traveller control | N | Cockpit drains |
| F | Ratchet jib sheet fairlead | O | Adjustable clew outhaul |
| G | Removable keel winch | P | Bulb keel |
| H | Trapeze wire | Q | Removable rudder assembly |

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2. The length of the spreaders should be sufficient to push the shrouds about 1 in. (25 mm.) out of the straight line.
3. The main spreaders to the shrouds are intended to be pinned so that there is no fore and aft movement. The pins, if they are not already inserted, should be put in when the mast is stepped at the correct rake, and should hold the spreaders in the position which they naturally assume between the mast and the shroud.
4. The forestay is attached to the strop coming through the deck ahead of the jib furling gear spindle and is intended to be very slack, so that when sailing all the loads come on the luff of the jib. The forestay is held away from the luff of the jib by a short length of shock cord (elastic) to the stemhead. This allows the jib to roll.
5. It is essential, when the boat is left on moorings, or for any length of time without the jib hoisted, that the mast should be steadied by the jib halyard attached to the jib tack anchorage; otherwise the mast will swing about and the rigging chafe.
6. The trapeze wire shock cords should be made fast to the trapeze ring and led from this to the aft side of the eye aft of the shroud plate; then to the forward edge of the splash board and round this to the other side.
7. The spinnaker halyard, spinnaker boom vang and jib furling line all lead aft through blocks to the cam cleats mounted on the aft side of the bridge deck.
8. The spinnaker boom vang leads through the plastic dead-eye forward of the mast. Knots in the vang will locate the vang positively when clipped behind the cleats on the spinnaker boom.
9. The spinnaker sheets can be made fast to nylon cleats on the foredeck and are led aft under the toe chocks to fairleads on each quarter. To stop them trailing in the water they are best clipped under cleats on the gunwale opposite the aft end of the cockpit. From the aft spinnaker fairleads the sheets may be led forward through a sheave at the outboard ends of the bridge deck and across to cam cleats on the forward side of the bridge deck.
10. The spinnaker halyard hoist can be led through an oval ring sliding on the forestay and back to the sail which stows in the bin let into the foredeck. The halyard can be clipped under a nylon cleat on the foredeck.
11. To prevent the end of the boom damaging the deck when hoisting sail, it is wise to pad the end.
12. The mainsheet take-off position on the boom can be altered to suit conditions. Moving it aft will cause more forward thrust at the gooseneck and, therefore, more mast bend. Moving it forward, reduces mast bend.
13. The kicking strap (boom vang) which is supplied with a spacer tube to fit on to the spindle of the drum to ensure that the drum is correctly positioned in relation to the locking lever; ensure that the spacer tube is fitted.

RIGGING FOR SAILING

1. The jib shackles directly on to the furling gear spindle; the eye on the wire halyard hooks on to the tensioning lever and must be tensioned by it, but final tensioning is best done after the mainsail is hoisted.
2. The jib sheets lead through the sliding fairleads by the shrouds, then aft to the ratchet fairleads. A double purchase is sometimes used, taking the sheet from an eye on the slide, through a block at the clew of the sail, and back through the sliding fairleads.
3. For normal conditions with mainsails of average cut, the mast should be allowed about 1½ in. (40 mm.) of forward travel at the deck. Chocks should be

inserted ahead of the mast to limit travel to this extent.

4. Some forward bend in the mast should always be allowed at deck level and on no account should the mast be chocked so that it is made to bend aft at this point. This will almost certainly produce pronounced aft bend below the hounds when running and may cause breakage in strong winds. The mast must be prevented from bending aft at deck level.

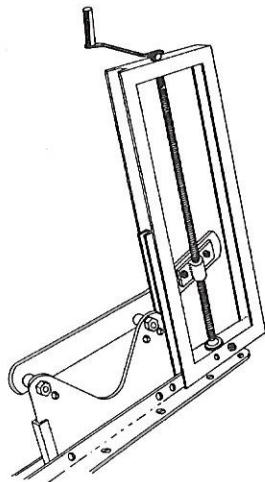
5. A sheave and cleat are mounted on the mast for tensioning the Cunningham hole tackle.

SAILING TECHNIQUE

1. The boat is very tolerant and can be sailed like an ordinary keelboat, but responds well to dinghy sailing techniques. It is designed to sail efficiently at about 15° of heel, but can sail well much more heeled than this, though it will go faster if sailed more or less at the 15°.
2. The rules of the class permit racing with a total crew of two or three. When racing with three the trapeze may not be used.
3. In fresh winds, make full use of the mainsheet slide, keeping fairly heavy tension on the leech of the mainsail, and easing the slide out to feather the sail as necessary (see General Notes on mast bend).
4. The jib sheet is not hard to hold in with the aid of the device recommended (ratchet block), but may be fairly hard to get in; it may pay to luff slightly while the sheet is hardened in.
5. The cockpit self bails at all angles of heel on all points of sailing, so the self bailers should be left down in rough weather.
6. The spinnaker shape encourages the sail to lift away from the mast. It is less likely to cause eddies on to the mainsail if about 1 ft. (300 mm.) of drift is allowed between the sail and the spinnaker halyard crane. It is a good idea to tie a stopper knot in the halyard at this distance from the end.
7. The mainsheet jamming device, mounted on the cockpit floor, is best operated by the helmsman's foot. Under most conditions the mainsheet wants to be heaved hard down, downwards pressure being applied with the foot as the last 2 in. (50 mm.) of sheet are hauled in. To unjam the cleat simply jerk it upwards. Lateral trimming of the mainsail should be mainly by means of the mainsheet slider controls.
8. The tiller should clear the aft hatch quite easily. The recommended fitting at the top of the rudder stock is an adjustable screw in the top for regulating the angle of the tiller.

FURTHER POINTS

1. A keel hoisting device is available. This works on the normal screw jack principle and raises the keel very easily in about two minutes. The class rules do not allow the keel to be raised during racing.
2. In some places where it is not possible to remove the boats from the water easily, it might be necessary to anti-foul the bottom. A light line is enscribed on the moulding to show the point to which anti-fouling should be applied.
3. There is a guide to take the jib furling line on to its drum, which should make it impossible for the line to jam on the drum. However, when furling the jib it is advisable to keep slight tension on the sheets as the sail is rolled up and to unroll the sail fairly slowly. If it is suspected that the furling line has fouled up, allow the spindle to rotate until all the line is taken off the drum. Then carefully wind it on again, by rotating the spindle.
4. When the boat is being left on the mooring, leave the self bailers down to allow rain water to drain out.



5. There should be no leakage into the hull, but it is wise to check periodically that the centre and forward sections are dry by removing the inspection hatches. The hatches in the cockpit floor are immediately over the lowest part of the hull when the boat is floating level, so that all water should drain down to this point, but it is wise to check that there is no water trapped behind the transverse stiffener at the aft end of the keel case. Occasionally check that the drain tube from the spinnaker bin is secure.

6. There should be a small hole in the stem to allow any water running down the forestay or jib furling gear spindle to drain out of the forepeak compartment (which has a watertight bulkhead between it and the bow buoyancy compartment). This drain hole should angle aft at the lower end, otherwise water may drive up it. It may be stoppered whilst sailing.

7. If the boat is trailed with the keel up, make certain that the keel cannot chafe the inside of the keel box. Wedge it securely at the forward and aft edges, at top and bottom. Avoid trailing with the bottom of the hull in contact with the keel bulb, as this is bound to damage both hull and keel; leaving about 1 in. (25 mm.) clearance between them.

8. All trailers should support the hull at the bulkheads. "Keel down" trailers should support the weight of the keel, giving three-point suspension between keel, hull at forward bulkhead and hull at aft bulkhead.

9. Do not attach mooring lines to the stemhead fairlead. Pass the line through the fairlead to a cleat on the deck or to the bridge deck or a shackle through the keel supporting angles.

10. Strops for lifting the hull by crane can be attached by a shackle through the large holes in the keel supporting angles, forward of the keel, and to the eye just forward of the mainsheet lead on the cockpit floor. The aft sling passes through the hole on the fore side of the bridge deck.

SUMMING UP

Although the Tempest is an advanced type of boat, a great deal of development will take place in the Class in the next few years and these notes are intended only for guidance. Tuning and new techniques of sailing may lead to modifications to these initial suggestions.

RULES FOR THE INTERNATIONAL TEMPEST CLASS BRITISH ASSOCIATION

The Rules of the British Association of the International Tempest Class are published here with the object of providing a guide to other National Associations making their Rules. The Committee of the International Tempest Association wishes to point out the desirability of all National Associations being organised on similar lines, particularly in their relationship to each other and to the International Association.

1. TITLE

The full title of the Association shall be the International Tempest Class British Association.

2. OBJECTS

The objects of the Association are to promote and further the interests of the International Tempest Class throughout the British Isles and to represent the interests of British owners of International Tempests as follows:

- to keep members informed of developments concerning the class and any proposals concerning class rules.
- to organise British Open Championships and to co-ordinate the programme for other races for the class in the British Isles.
- to encourage National and International competition in Britain for the class.
- to negotiate with the International Tempest Association on any matters relating to the Class Measurement Rules.
- to promulgate information on technical development within the International Tempest Class.
- to keep a National Association Register.

3. TERMS AND DEFINITIONS

Throughout these rules the following defined terms will be used:

- "The National Association" shall mean the International Tempest Class British Association.
- "The International Association" shall mean the International Tempest Association formed to control the affairs of the International Tempest Class throughout the world.
- "The Committee" shall mean the Committee of the National Association, consisting of duly elected committee members and members appointed as regional members.
- "The National Association Rules" shall mean the rules governing the conduct of the National Association.
- "The National Association Register" shall mean the register of owners of International Tempests in Britain, with their addresses, name and number of boat, to be kept as hereinafter provided.
- "The Class" shall mean the class of sailing yachts designed by Ian Proctor and made in accordance with his drawings and specifications, and known under the name "International Tempest".
- "The Measurement Rules" shall mean the rules relating to measurement, construction and racing conditions of the class and governing the building of each International Tempest and its rating as a recognised boat within the class for class racing purposes.
- "The Registered Number" shall mean the sail number allocated to the boat.
- "The National Class Secretary" shall mean the duly elected Honorary Secretary or duly appointed Secretary, as the case may be, of the National Association.
- "Certificate" shall mean a certificate to be issued, ratified and endorsed as hereinafter provided and recording:
 - The registered number and initial ownership of an International Tempest and any changes in ownership.
 - The fact that such International Tempest originally complied with the class rules on completion of construction, together with such particulars as may be required by the class rules.
- "Valid Certificate" shall mean a certificate in which:
 - The particulars of ownership are up to date and entered on the Class Register of the International Tempest Association.
 - Any endorsement required by the Measurement Rules has been duly entered.

BRITISH RULES (Continued)

- (l) "Fleet" shall mean three or more registered International Tempests, not under the organisation of an already existing International Tempest class fleet, normally located sufficiently near to each other to permit regular racing between them.
- (m) "Owner" and "Joint Owner" shall mean any person or persons, corporation or association entered on a certificate as owner or joint owner of an International Tempest.

4. MEMBERSHIP AND VOTING RIGHTS

- (a) The following classes of membership shall be recognised:
 - (i) Full Membership.
 - (ii) Associate Membership.
 - (iii) Honorary Membership.
- (b) *Full Membership* shall, upon payment of the prescribed annual subscription, be open to any owner of a British Registered Tempest or, in the case of joint owners, to any one of them, or in the case of a British Tempest owned by a Corporation or Association, to a nominated representative of that organisation.
- (c) *Associate Membership* shall, upon payment of the prescribed annual subscription, be open to any joint owner of a British Registered Tempest not being a full member, or to all individuals or clubs interested in the International Tempest Class in Britain.
- (d) *Honorary Membership* shall be open to any person having an interest in the National Association or in the International Tempest Class in Britain who is proposed by a Full Member and seconded by at least one member of the Committee and is elected by Members of the National Association at any General Meeting of the National Association.
- (e) Members shall be bound by the National Association rules.
- (f) Members acting as helmsmen or entering International Tempests in races which consist of, or include, the class shall be bound by the Measurement Rules.
- (g) Each full member shall be entitled to one vote at a General Meeting of the National Association, or in a postal ballot. Associate and Honorary Members shall be entitled to attend and speak at any General Meeting, but not to vote.
- (h) All Full or Associate Members of the National Association shall ipso facto be an equivalent Member of the International Association.

5. MANAGEMENT

- (a) The affairs of the National Association shall be managed by the Committee, which shall be the only body empowered to make recommendations to the International Tempest Association for changes in the Measurement Rules.
- (b) The Committee shall consist of not less than six and not more than ten full members of the Association, elected annually at a General Meeting of members, or by postal vote, as elected Committee Members. In addition, each area, as later defined, with three or more fleets, shall be entitled to appoint one full member of the Committee. Each area with ten or more fleets shall be entitled to appoint two full members to the Committee. The areas shall be:
 - South West England.
 - Southern England.
 - South East England, including East Anglia.
 - North East England.
 - North West England.
 - Wales.
 - Scotland.
 - Northern Ireland.

The Committee shall have powers to co-opt any person to assist it, whether a full member of the Association or not, but such persons shall have no vote in Committee.

- (c) No member shall serve on the Committee as Elected or Regional Committee Member for more than three years, at the end of which period he shall retire, but shall be liable for re-election after an interval of one year and may be co-opted.
- (d) The Committee need not fill a vacancy arising in the Committee unless the total number of Committee Members has dropped below the minimum of six. Committee Members appointed to fill vacancies shall remain in office until the expiry of the term of office of the person whose position they have filled.
- (e) At its first meeting, to be held immediately after the Annual General Meeting of the National Association, the Committee shall:
 - (i) Elect one of its members to act as Chairman of the Association for the following year.
 - (ii) Elect an Honorary Secretary or appoint a Secretary, who shall keep correct Minutes and records of all Committee and General Meetings, together with the National Association Register, and shall be responsible for communicating the decisions of the

Committee to members of the National Association, to the Secretariat of the International Tempest Association and, when directed by the Committee, to owners and joint owners, not being members of the National Association.

- (iii) Elect an Honorary Treasurer, who shall have charge of the funds of the National Association; make such disbursements as the Committee shall direct; keep an accurate record of the financial affairs of the National Association; present an annual financial statement at each Annual General Meeting. The Secretary or Honorary Secretary may act as Treasurer.
- (iv) Appoint an Auditor who shall certify the annual financial statement.
- (f) At meetings of the Committee, one-third of the elected members shall form a quorum.
- (g) The Committee shall have power to make recommendations to the members in general meeting, or by post, for alterations in, or additions to, the National Association Rules.
- (h) The Committee shall arrange an Annual National Championship of the class and shall co-ordinate such Regional Championships as may be required. All matters pertaining to International Championships held in Britain shall be settled by the Committee in consultation with the sponsoring Club or Clubs, the R.Y.A., the I.Y.R.U. and the International Association.
- (i) At least three weeks' notice of the date, place and agenda for any Committee Meeting must be given in writing by the Secretary to each Committee Member. Any business conducted by correspondence shall always be circulated through the Secretariat, and any Committee Member not answering a motion communicated to him in writing within three weeks of the date of sending shall be deemed to have agreed to such motion.
- (j) Acceptance of a Certificate by an owner or joint owners shall ipso facto render him or them subject to the jurisdiction of the National Association or the Committee in any matter pertaining to class rules.

6. POWERS OF THE COMMITTEE

Subject to the provision of these rules, and in particular to the object of the National Association, as expressed in Rule 2, the General Committee shall be empowered to perform all functions of management and administration. The making of payments and receipt of monies shall be validly evidenced only by the signature of the Treasurer or his Deputy as appointed by the Committee and payments or receipt of monies exceeding the sum of £100 shall require the signature of the Chairman and Secretary or Treasurer.

7. CONDUCT OF MEETINGS OF THE NATIONAL ASSOCIATION

- (a) The Annual General Meeting of the National Association shall be held annually in October, either in London or any other place judged by the Committee to be most convenient to the majority of members of the Association. The precise date, time and place to be at the Committee's discretion.
- (b) A Special General Meeting shall be called by the Chairman or Class Secretary upon receipt by the Class Secretary of a written request, signed by not fewer than fifteen full members of the National Association.
- (c) At least six weeks' written notice shall be given to members of any General Meeting.
- (d) At any General Meeting or Committee Meeting decisions shall be limited to matters on the agenda, other than those concerning the measurement rules, shall be carried by a majority vote. Voting shall be by a show of hands, unless a poll is demanded by not fewer than three of the full members present. At any meeting the Chairman shall have a casting vote. The Secretariat shall be responsible for circulating all members, or in the case of Committee Meetings all Committee members, with the result of any voting. In the event of a postal ballot, all returns shall be made to the Secretariat within two weeks of the date of posting the ballot paper.
- (e) At any General Meeting of the National Association, eleven shall form a quorum.
- (f) At any General Meeting of the National Association a decision to recommend to the International Tempest Association a change in, or addition to, the measurement rules shall require a majority of two-thirds.

8. SUBSCRIPTIONS AND REGISTRATION FEES

- (a) Subscriptions payable for all classes of membership of the National Association shall be payable annually and shall be decided at the Annual General Meeting and shall become due on 1st March of the following year. A member joining the National Association after 1st October, whose subscription has been paid for that year, shall not be liable to pay his subscription for the ensuing calendar year.

- (b) Unless otherwise determined by the National Association in General Meeting, the annual subscription for full members shall be £3 and for associate members £1 10s. 0d.
- (c) Any member whose subscription has not been paid within three months of the date due may have his name removed from the list of members of the National Association by the Committee. A member's name may be restored to the National Association Register at the discretion of the Committee, on payment of any subscriptions due.

9. ANNUAL CONTRIBUTIONS TO INTERNATIONAL TEMPEST ASSOCIATION

A percentage of the National Association's annual income from subscriptions, which shall be the same as that applied to all other National Associations, shall be contributed to the International Association annually as a general levy, the percentage to be fixed bi-annually by the Committee of the International Association. For 1966-67 it shall be 25 per cent.

10. ACCOUNTS

- (a) The Committee shall cause true accounts to be kept giving full particulars of:
 - (i) All monies, assets and liabilities of the National Association.
 - (ii) All monies received and expended by the National Association and the reasons for such receipts and expenditure.
 - (iii) All sales and purchases by the National Association.
- (b) The Committee shall cause the annual financial statement to be prepared and presented at every Annual General Meeting of the National Association.
- (c) A copy of the annual financial statement, duly audited, prepared for presentation at a General Meeting shall, not less than fourteen days prior to such General Meeting, be sent to every full member of whose address the Committee is aware.
- (d) A copy of the annual financial statement, audited and as accepted by the General Meeting, shall be forwarded to the International Association within 14 days of its acceptance by a General Meeting.

11. PROTECTION OF 'ONE-DESIGN' OF THE INTERNATIONAL TEMPEST

- (a) The National Association shall assist the International Tempest Association to maintain the one-design character of the International Tempest class yacht and shall report to the International Tempest Association any matter which may appear to violate or threaten the spirit of the class measurement rules.
- (b) The National Association shall assist the International Tempest Association in making recommendations concerning the number and distribution of builders in Great Britain, bearing in mind Rule 9(a) of the International Tempest Association Constitution.
- (c) No yacht shall be entered on the National Association Register as an International Tempest unless a certificate has been issued in respect of such yacht, in accordance with the class measurement rules.
- (d) The National Association shall collaborate with the R.Y.A. in the allotment and issue of Class Numbers for British owned International Tempests as they are built, and in providing information on allotment of numbers, names of boat, names of owners and addresses and change of ownership to the Secretariat of the International Tempest Association.
- (e) Certificates for British owned Tempests shall be obtainable from the R.Y.A., which may delegate its duties to the National Association, upon production of a measurement form properly completed by a National Measurer or an Official Measurer appointed by the National Association, showing the boat to be within the requirements of the International Tempest measurement rules.
- (f) The National Association shall arrange for inspection of Certificates of all International Tempests competing in British National Championships, and shall arrange that entry forms for such Championships give notice that valid certificates shall be inspected and that measurements of new or replacement sails are entered on the certificate.

Keith Musto at the helm and Ian Winter on the trapeze, winners of the Tempest European Championships 1966 in "Duffy". Keith Musto was a Silver Medal winner in the Flying Dutchman Class for Britain in the 1964 Olympics. Ian Winter was an Australian Olympic Flying Dutchman crew.





INTERNATIONAL TEMPEST ASSOCIATION LAUNCHING COMMITTEE

HONORARY SECRETARY

Mrs. Dinah White

17 Bywater St., Chelsea,
London, S.W.3, England
Telephone: Kensington 9949

CHAIRMAN	Beecher Moore	19-21 Farringdon Street, Ludgate Circus, London, E.C.4
HON. TREASURER	Robin Coleman	Little Brook Farm, Lower Birtley, Godalming, Surrey
TECHNICAL ADVISER	Ian Proctor	Fenmead, Brook Avenue, Warsash, Southampton
	L. B. Baillon	Canal House, Blisworth Arm, Northampton
	R. S. Burdis	Howey Croft, Frodsham, Cheshire
	Dr. W. Frank	Deutscher Segler-Verband, 2000 Hamburg 22, Schwanenwik 27, W. Germany
	Bengt Julin	Box 16031, Stockholm 16, Sweden
	C. Norbury	Acorns, Crofton Way, Warsash, Southampton
	F. G. Parson	Richardson Boats & Plastics, Neasham Road, Darlington, Co. Durham
	J. M. Schoonmaker II	4358 North Bay Road, Miami Beach, Florida 33140, U.S.A.
	R. Tasker	256 Stirling Highway, Claremont, Western Australia
	L. Widdicombe	Flemish House, Aldham, Ipswich, Suffolk
	R. White	Rhynie, The Spinney, Itchenor, Sussex

NATIONAL ASSOCIATION SECRETARIES

ERRATA—PAGE 43.

FOR INTERNATIONAL TEMPEST CLASS ITALIAN ASSOCIATION
READ—INTERNATIONAL YACHT RACING UNION

INTERNATIONAL TEMPEST CLASS CANADIAN ASSOCIATION
F. H. Buller, 16 Michigan Drive, Willowdale, Ontario

INTERNATIONAL TEMPEST CLASS AUSTRALIAN ASSOCIATION
G. F. Garrett, Perak Street, Mona Vale, N.S.W.

INTERNATIONAL TEMPEST CLASS ITALIAN ASSOCIATION
Capt. Nigel Hacking, 171 Victoria Street, London, S.W.1

TEMPEST FLEETS

BRITAIN

Fleet No. 1 Itchenor, Chichester, Sussex
Fleet No. 2 Menai Straits, Caernarvonshire
Fleet No. 3 Grafham Water, Huntingdonshire

U.S.A.

Fleet No. 1 Noroton, Connecticut
Fleet No. 2 Manhasset Bay, New York
Fleet No. 3 Marion, Massachusetts
Fleet No. 4 Chesapeake Bay, Maryland
Fleet No. 5 San Francisco Bay Area, California
Fleet No. 6 Mamaroneck, New York

SWEDEN

Fleet No. 1 Stockholm

TEMPEST INTERNATIONAL FIXTURES

24-28 March	Easter Fish	Bendor	S. France
30 April-4 May	Open Meeting	Alassio	Italy
27-29 May	Itchenor Bowl	Itchenor S.C.	England
29 July-5 August	Founder's Trophy British Southern Championships Cowes Week	} Cowes, Isle of Wight	England
29 July-12 August	Straits Fortnight		
21-26 August	WORLD CHAMPIONSHIPS	Menai Straits Yacht Clubs of Weymouth	Wales England
2-7 September	European Championships	Medemblik, Royal Netherlands Y.C.	Holland
28-29 October	Grafham Hull	Grafham Water S.C.	England



Bengt Julin's Tempest II from Sweden, with David Thomas steering and Hans Birgvist as crew, was second in the 1966 European Championships. With a very full Swedish-made mainsail, she went particularly well in light airs.

MEXICO

Sail No.	Name of Boat	Owner
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MX1
MX2
MX3

INFORMATION NEEDED

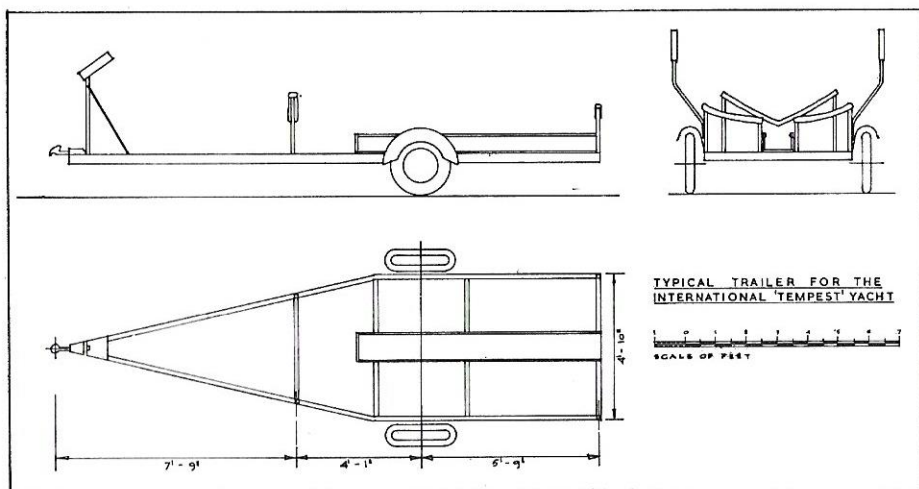
The International Tempest Class is still young and though vigorous it needs all the help it can get from owners to make it stronger and better organised.

The lists of owners in this handbook were compiled from all the information available at the time, but they are admittedly very incomplete. Seventy-five boats are listed, but over two hundred building fee receipts had been issued to builders by then and the class was rapidly growing. National Class Associations were beginning to get to grips with their task of organising Tempests in individual countries but they need more information—and so does the International Tempest Association—to enable us to record the impressive growth of the class accurately.

We also need plenty of news and photos for the I.T.A. Newsletters.

NAMES AND ADDRESSES OF BUILDERS

BRITAIN	Richardson Boats & Plastics Ltd., Neasham Road, Darlington, Co. Durham
U.S.A.	The O'Day Company, 168 Stevens Street, Fall River, Massachusetts 02722 Plas Trend, P.O. Box 935, Fort Worth, Texas 76114 W. D. Schock & Co., 3502 S. Greenville Street, Santa Ana, California 02704
CANADA	Canada Yacht and Boat Centre Ltd., 40 Stadium Road, Toronto 2B Smallcraft of Canada Ltd., 3839 Burnslan Road, Calgary, Alberta
ITALY	Campagna Impresse Marittime, Via Muzio Clementi 62, Rome Bianchi & Cechi, Via S. Lorenzo 23-9, Genoa
AUSTRALIA	Fibreglass Yachts Pty Ltd., Perak Street, Mona Vale, N.S.W. Binks Yacht Constructions, 29 Byrne Avenue, Paringa Park, S. Australia
FRANCE	L. Lanaverre, S.E., 98 Quai de la Souys, Bordeaux-Bastide
HOLLAND	Dubdam Ltd., 60 Oranjellaan, Alkmaar
W. GERMANY	Klepper-Werke, 82 Rosenheim, Bayerische Alpen



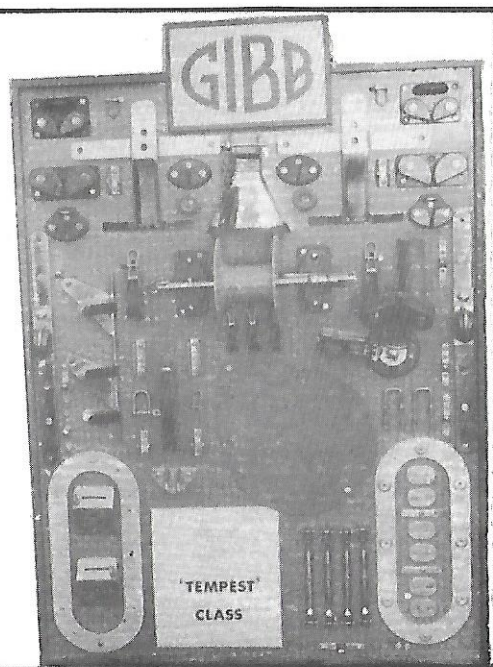
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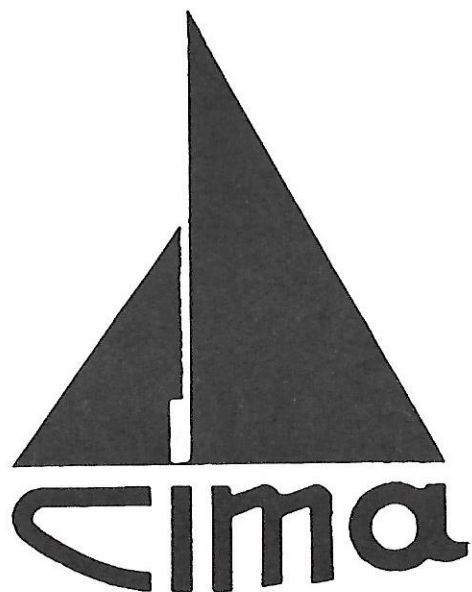
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Telephone: Office 68661 Works 69470

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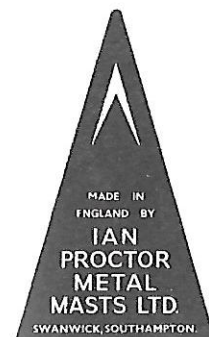
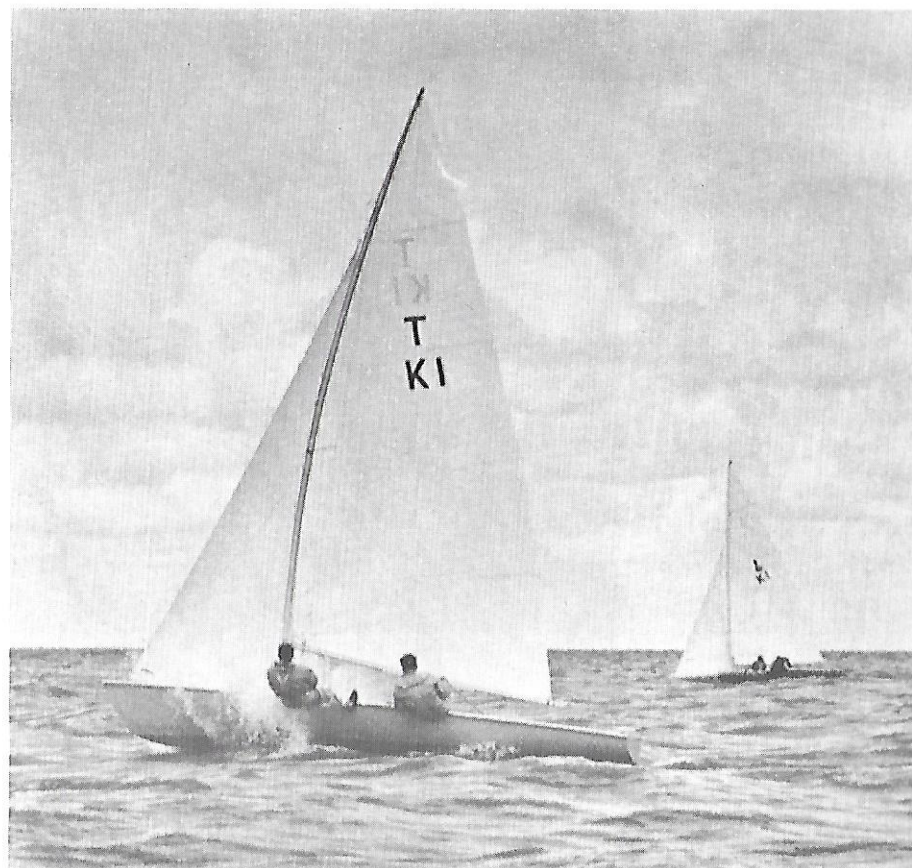
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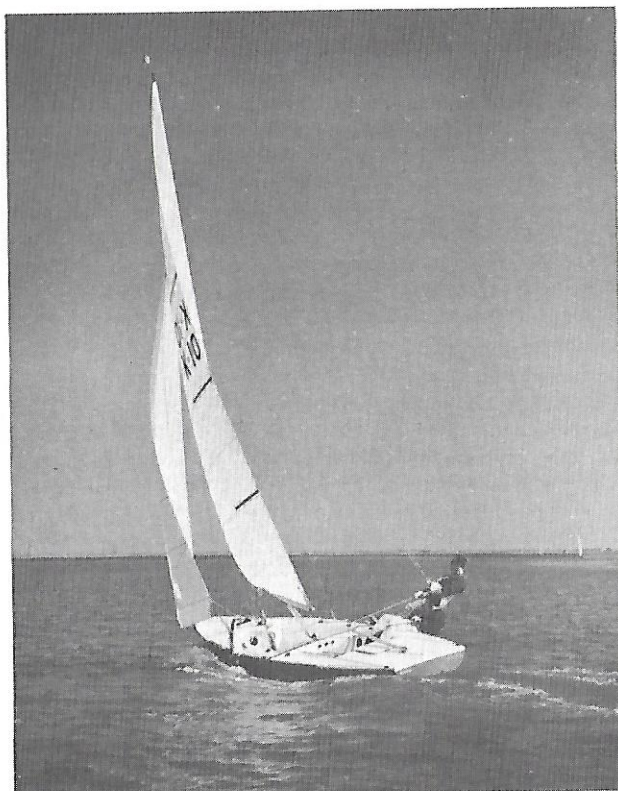
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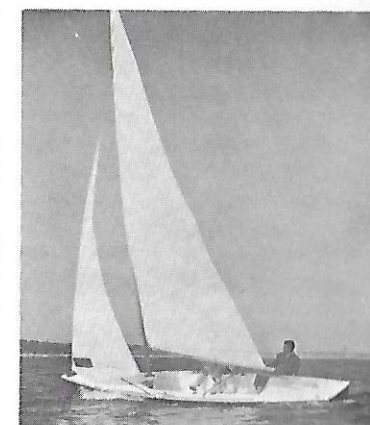
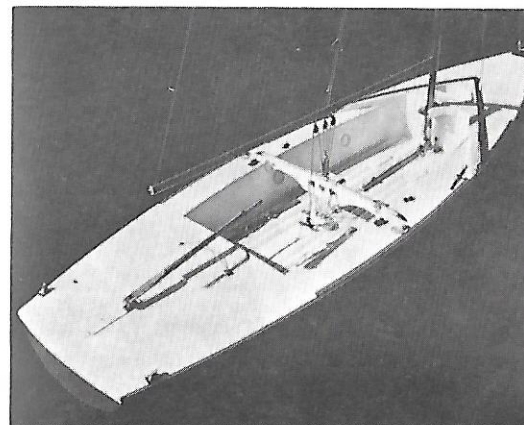
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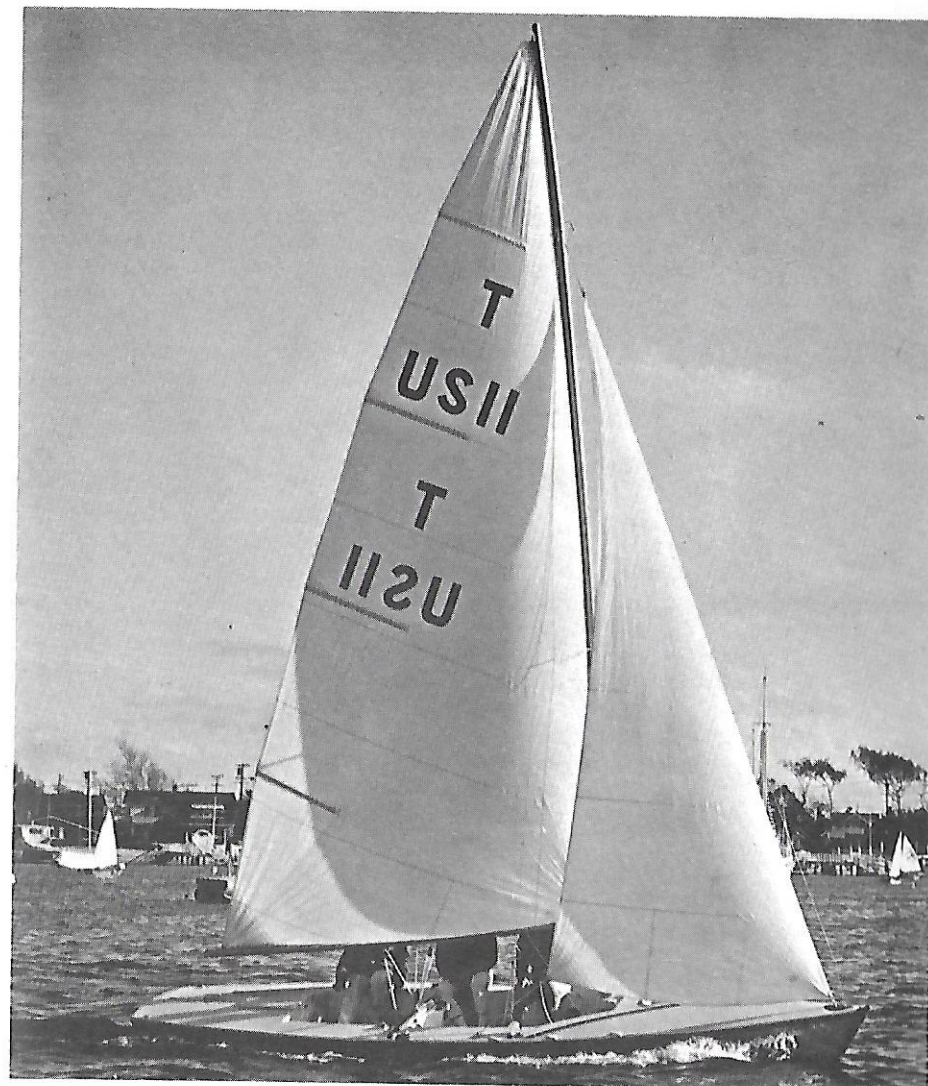
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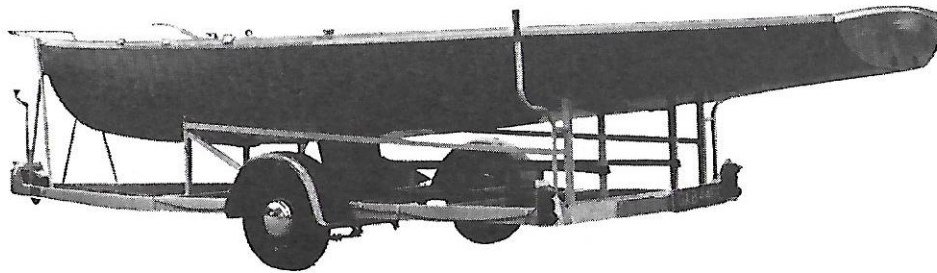
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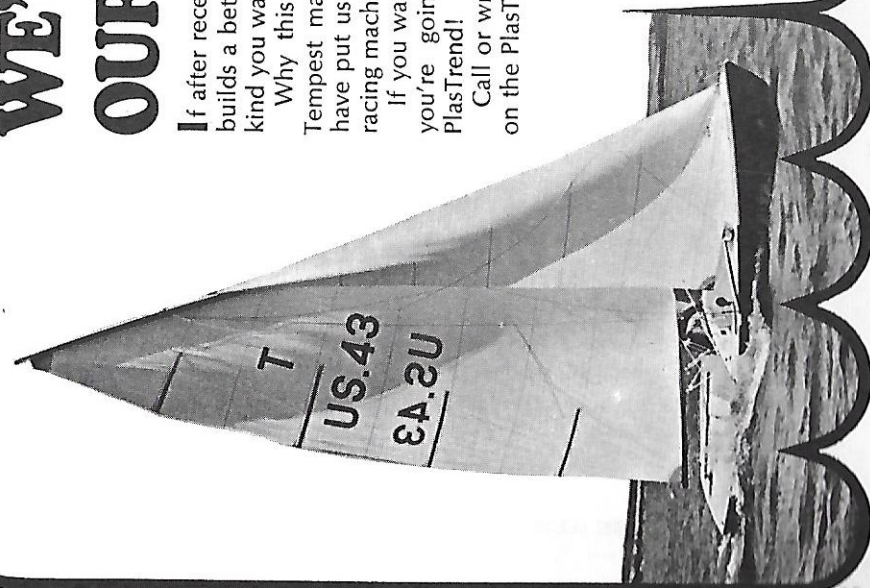
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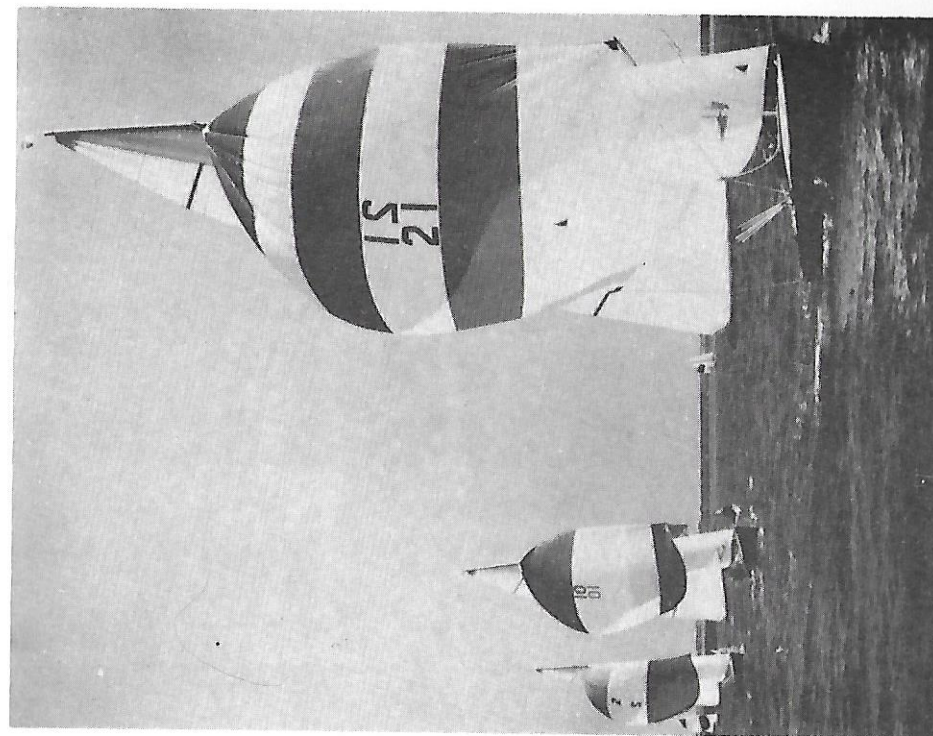


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